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UNUNITED FRACTURES OF THE SHAFT OF THE HUMERUS

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Only complete failure of union will be considered in this discussion and report. Delayed union is not included. I have not considered any true cases of nonunion until at least six months has elapsed. The principal causative factors in nonunion of the shaft of the humerus are, first, failure of reduction and maintenance of reduction and fixation for a sufficient length of time; second, failure of direct bony contact, prevented by interposition of soft tissue; third, early operative intervention with insertion of nonabsorbable material, and, fourth, constitutional or debilitating diseases and metabolic changes. I will not go into the details of the physiology and biology of wound healing, but it is necessary to understand certain fundamental laws regarding bone healing to consider nonunion effectively. The work of Leriche and Policard is a monumental treatise on this subject and explains in detail the pathologic physiology of ossification and healing of fractures.

The essential changes that take place following a fracture may be stated thus: Immediately following the fracture there is always hemorrhage, with formation of a clot. This organizes, fibroblasts form, and later there is a deposit of calcium salts. The exact mechanism of the deposit of calcium and formation of callus is not thoroughly understood, so the failure of the formation of callus and the failure of union cannot always be explained satisfactorily. So, too, the fate of grafted bone is a moot question; but, if it does not live, it surely stimulates osteogenesis and forms a structure for the formation of new bone and supplies calcium in abundance at the site of the healing process. At first there is the "stimulus of incompleteness," as John Hunter called it, and nature tries hard to bridge the gap. If there is interposition of soft tissue, or frequent attempts at reduction interfering with the formation of callus, nature seems to get disheartened and allows the ends of the fragments to become sealed over and seems satisfied with only fibrous union. After this condition has set in, the soil is no longer fertile and unusually strong pressure must be brought to bear to stimulate osteogenesis. This "stimulus of incompleteness" must be reestablished by breaking the continuity of the vascular system and allowing nature to have a new chance at healing.

Albee¹ lists the causes of nonunion as follows:

1. Granulation tissue may fail to bridge the gap:
 - (a) Because of the interposition of tissue which the granulations cannot penetrate.
 - (b) Because the fragments are so displaced that the two areas of granulation cannot meet.
 - (c) Because of too extensive removal of blocks of living bone after fracture has left the fracture surfaces too far apart.
2. Granulation tissue may degenerate into scar tissue before ossification has been established.
3. The early granulation tissue may be disrupted by manipulation or inadequate immobilization.
4. Disorganization may be produced by rough manipulation after the formation of soft callus.
5. Marked circulatory disturbance at the site of fracture.
6. Infection.
7. Foreign material, such as the insertion of Lane plates.
8. Absorption of solid callus before restoration of trabecular alignment has been completed. He states further that reparative response after fracture seems strikingly independent of the systemic condition.

Cubbins and Scuderi² reported a series of 500 consecutive cases of fracture of the humerus, treated in Cook County Hospital, Chicago. Their conclusions are as follows: Ninety-four and four-tenths per cent of these cases were treated by closed methods. Nonunion or delayed union occurred in 3 per cent and radial palsy in one of every eight cases of fracture of the middle third. (For economic reasons, nonunion and delayed union were not carefully differentiated.) All the cases of nonunion occurred in fractures of the middle third of the shaft, the transverse type of fracture being the greatest offenders while the comminuted type healed with solid bony union. Cubbins and Scuderi further stress the points that foreign bodies should be avoided as much as possible in open reductions and that the periosteum should be left intact whenever possible. I believe it is quite possible many times that foreign material, such as plates, keeps the fragments apart, institutes rarefying osteitis and actually prevents union even though the fixation is very secure. The autogenous onlay graft has three distinct advantages, namely,

1. It furnishes efficient fixation of the fragments.
2. There is a large area of healthy, viable bone brought in contact.
3. Being autogenous, there is little reaction or excitation on the part of the tissues to extrude it. It acts as a superstructure until it is resorbed and replaced by new viable bone.

As previously stated, once the condition of nonunion is established the stimulation of union is exceedingly difficult and calls for radical measures. Regarding the

Read before the Section on Orthopedic Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 13, 1933.

1. Albee, F. H.: Principles of the Treatment of Nonunion of Fractures, *Surg., Gynec. & Obst.* 51:289-320 (Sept.) 1930.
2. Cubbins, W. R., and Scuderi, C. S.: Fractures of the Humerus, *J. A. M. A.* 100:1576-1579 (May 20) 1932.

present small series and previous experience with ununited fractures, I feel that the massive onlay graft is the operation of preference. These cases are most stubborn, and nothing short of radical procedure and the reestablishment of normal circulation and extensive bone contact will induce union. The technic of the operation is rather difficult and time consuming and requires a corps of trained assistants; but I believe the end justifies the means.

The details of the operation that I have used in the present series are essentially as outlined by Campbell³ and are as follows:

An incision is made over the outer aspect of the arm, extending approximately 3 inches above and below the site of fracture. The fascia and muscles are divided and the musculospiral nerve is located and retracted. The sealed or eburnated ends of the fragments are removed with a saw and the ends of the bones step-cut to allow more raw bone surface to come in contact. The medullary canal is thoroughly freshened with a curet, all scar tissue being removed. The removal of scar tissue whenever possible is highly important, as it interferes with normal circulation. The periosteum is incised longitudinally and stripped backward with a sharp osteotome, as many bone cells as possible being left attached. Then the bony surface of the broken fragments is flattened with a chisel, and the ends are carefully fitted together and made ready for the onlay graft.

The onlay graft is removed from the internal surface of the upper two thirds of the opposite tibia, about three-fourths inch wide and of ample length, usually from 6 to 8 inches. Holes drilled in the prospective graft are located and made before the removal of the graft. Accurate measurements can be taken in order to have these properly placed. Then the graft is removed, including all structures. A small additional graft is taken one-fourth inch wide, which is the usual dimension of the drill used. This is then cut in pins of ample length to go through the graft and both cortices of the humerus. From two to three pins are inserted above and below the fracture line. Some of the cancellous bone from the tibia at the upper end is removed and packed round the fracture line of the humerus. The graft is held in place with bone forceps, the holes are then drilled through both cortices of the humerus, and pins, which have been previously provided, are inserted. Two strands of number 3 chromic catgut, doubled, are placed round the humerus and the graft at each end and tightly tied in order to reinforce the stability of the graft. The periosteum, which has been previously retracted with underlying bone cells, is drawn to the side of the graft as far as possible. The deep wound is closed with interrupted sutures, the graft being carefully covered with as much muscle and well nourished tissue as possible. The remainder of the wound is closed in layers, sterile petrolatum gauze is applied to the skin incision, a dry dressing, and a previously provided plaster spica is slipped on and carefully placed, with due precaution not to get undue pressure on the ulnar nerve. The forearm is placed in supination, the hand slightly dorsiflexed, the fingers being left free to grip. The patient is kept off his feet for at least six weeks, not entirely on account of the graft having been removed from the tibia but because I feel that more complete immobilization can be attained if the patient's body is kept quiet. Fixation dressing is kept on the arm for at least four months. Roentgen inspection about once a month should be made. At the end of three months the top is removed from the arm cast for application of heat and light massage.

At this time I present the end-results of treatment in eight cases of ununited fracture of the humeral shaft treated by the massive onlay graft method. In this series the average time elapsed from the initial fracture until the onlay graft operation was performed was twenty-two months and the average age of the patients operated on was 38 years. The youngest patient was 28 and the oldest patient 57. The longest time since the onlay graft was performed for ununited fracture

of the shaft of the humerus is eleven years and the last case considered in this series was thirteen months. Of the eight patients, five had had previous open operation, varying in type. All had some foreign material inserted; one patient had had five open operations before the onlay graft method was used. One of the eight cases reported is a failure. While nonunion of the shaft of the humerus has been reported as occurring more than any other bone except central fracture of the neck of the femur, my observation has been that nonunion has occurred more frequently in the lower third of the tibia than it has in the shaft of the humerus.

REPORT OF CASES

CASE 1.—J. D. E., a man, aged 30, an airplane pilot, was cranking a seaplane in New Orleans in January, 1921, when the engine back-fired and he suffered a comminuted fracture of the lower third of the left humerus. An open operation was performed the following day, which consisted in the removal of one of the broken fragments of bone and the application of a Parham-Martin band. The patient came to me four months later with nonunion, a definite rarefying osteitis, and wrist drop as a result of injury to the ulnar nerve, probably at the time of the accident. May 13, the band was removed, the fragments were freshened and the ulnar nerve, found to be partially severed was sutured and a flap of fascia and fat was placed around this portion of the nerve, the wound was closed, and an external fixation dressing, which consisted of a plaster spica, was applied with the arm in 90 degrees abduction and the wrist dorsiflexed. The bones showed no disposition to unite because of the lack of maintenance of continuity and devitalization of the broken ends. Oct. 30, 1922, a massive onlay graft was applied in the manner previously described. A fixation dressing, composed of a plaster spica, was reapplied. This dressing was removed entirely in about five months. Recovery from the ulnar nerve paralysis was complete. Laboratory examination showed nothing of interest. The final functional result has been excellent, with firm bony union.

CASE 2.—F. J., a white woman, aged 45, fell on a sidewalk, July 6, 1926, and sustained an oblique fracture of the left middle humeral shaft. Six days later an operation was performed, a silver wire being used to fix the broken fragments. The patient was referred to me, March 21, 1927. The following day I did a massive onlay graft operation, removing the wire and at the same time applying a previously prepared, bivalved plaster spica. This was removed at the end of three months. There was definite clinical and roentgen evidence of solid bony union. Physical therapy was instituted to hasten function of the elbow and wrist. The result was good.

CASE 3.—Mrs. M. E., aged 57, white, very obese, a housewife, fell on the street, Sept. 14, 1930, sustaining a fracture of the middle of the shaft of the left humerus. An intramedullary beef-bone peg operation was performed shortly after the injury. Five months later, while the patient was turning in bed, there was a fracture of the peg. In March, 1931, an osteoperiosteal chip graft was done after removal of the pins and an external fixation dressing was applied, which remained on for sixteen weeks. Union was not complete. Blood chemistry, metabolic rate and complete blood examination were all normal. The Wassermann reaction was negative. Feb. 16, 1932, a massive tibial onlay graft operation was done. The patient was discharged from the hospital fourteen weeks later wearing a plaster spica to the left shoulder. After eighteen weeks the cast was removed and a roentgenogram showed firm bony union. One week later the patient tripped on a rocking-chair and fractured the humerus at the original site of the fracture. Another massive onlay graft operation was done and a fixation dressing reapplied. Union has not occurred. This is the case which I referred to as a failure.

CASE 4.—S. N., a white man, aged 28, an oil well driller, was admitted to the Louisville City Hospital, Feb. 21, 1927, with a diagnosis of ununited fracture of the left humerus, with partial paralysis of the radial nerve. The patient stated that he caught his arm in the fly-wheel of a gasoline engine, Aug. 5, 1923, sustaining a compound, comminuted fracture of the shaft of the left humerus in the middle third. The arm was operated

3. Campbell, W. C.: A Textbook on Orthopedic Surgery, Philadelphia, W. B. Saunders Company, 1930, pp. 424-425.

on immediately, the broken fragments were removed, the remaining ends were wired together with silver wire and an arm splint was applied. In August, 1923, a loose piece of bone was seen by roentgen examination and another operation was performed for removal of the loose fragment, at which time it was rewired. The wound was infected, and treatment with surgical solution of chlorinated soda was instituted. The patient was then allowed to get up and carry the arm in a sling. A roentgenogram, Feb. 23, 1927, showed a gap about 1 inch wide between the fragments; there was no evidence of infection or callus. The Wassermann reaction was negative. The usual laboratory examination gave results within the normal limits. The massive onlay graft operation was performed in 1927 and a previously prepared abduction spica was applied to the shoulder. The wound healed by primary union and the patient was discharged from the hospital but returned to the clinic for observation from time to time. The cast was removed four months later and union seemed firm. The last report was that there was restoration of about 75 per cent of normal function. No pain was felt and there was firm bony union. The patient was last seen, Sept. 19, 1928, at which time he had a good, useful arm with bone firmly united.

CASE 5.—W. C. R., a white man, aged 33, a railroad employee, was admitted to the Louisville City Hospital, May 26, 1926, with a diagnosis of ununited fracture of the middle third of the right humerus. The patient stated that five years previously he had a fracture of the right humerus and had had five open operations performed, which included an intramedullary beef-bone peg, a Lane plate, a silver wire and an osteoperiosteal graft. June 12, 1926, a massive onlay graft from the left tibia was placed, with fixation dressing. His convalescence was uneventful. He was discharged from the hospital, October 21, and there was firm bony union. Return of function of the elbow and shoulder was present to about 75 per cent of normal.

CASE 6.—F. J. J., a white man, aged 36, a salesman, was injured in an automobile wreck in 1926. His right arm was resting on the door of his automobile and was side-swiped by a truck, which resulted in a fracture of the middle of the shaft of the right humerus. The fracture was treated conservatively, with external fixation dressing. He consulted me three years later, with a definite nonunion of the humerus. There was a typical pseudarthrosis at the site of the fracture. The nerve was not involved. Oct. 21, 1929, a massive tibial onlay graft operation was performed, a graft being taken from the left tibia. A previously prepared spica cast was applied. This dressing was removed four months later. The patient moved to Birmingham, where he was observed by Dr. Laurence Scott of that city. Dr. Scott reported to me that his observation, which included roentgen investigation, showed firm bony union. Six months after all the external splints had been discarded the patient was in another automobile accident and was thrown from the car. At this time he sustained a fracture of the graft at the original fracture line. An external fixation dressing was applied in the hope that union might take place, but this was a disappointment. March 31, 1932, another massive tibial onlay graft operation was performed, a graft being taken from the right tibia. An airplane splint, which had been made to fit securely, was applied because the patient objected to the weight and heat of the plaster. This time the wound healed primarily, as before. The splint remained on for four months, at which time there was firm bony union, shown by clinical and roentgen examination. A light plaster arm splint was applied for protection, and remained on for two months longer. The patient was allowed to use the arm in a limited way. It has now been fifteen months since the last operation. He has firm bony union and normal restoration of function of the right arm.

CASE 7.—L. T., a Negress, aged 47, a housewife, was struck by an automobile, Jan. 14, 1932, while crossing the street, being knocked unconscious and sustaining a fracture of the right humerus, the middle and upper third of the right tibia and fibula, and the left tibia and fibula. She was removed to the Louisville City Hospital, where a Jones arm splint was applied the following day. March 29, an airplane splint was applied. Four months later other fractures sustained at the same time had healed. Clinical and roentgen examination showed no disposition for the broken fragments to unite. Six months after the fracture a massive onlay graft operation was

performed by my associate, Dr. R. T. Hudson, who was in the orthopedic service of the Louisville City Hospital. The Wassermann reaction was negative; the blood examination was normal, and the blood chemistry was within the normal limits. In November, 1932, the cast was removed and the patient returned for observation at the clinic from time to time. She was last seen, April 10, 1933, when clinical and roentgen investigation showed firm bony union and complete restoration of normal function of the arm and shoulder.

CASE 8.—J. R., a white man, aged 30, a miner, was injured in a mine accident in September, 1929, sustaining a fracture of the shaft of the left humerus. He was treated by a mine surgeon, who applied traction and later an airplane splint. The patient was admitted to the Kentucky Baptist Hospital in January, 1930, with no union of the fragments and complete disability of the left arm. The Wassermann reaction was negative. Urine and blood examination gave normal results: Blood calcium was normal. Feb. 1, 1930, a massive tibial onlay graft operation was performed followed by a previously prepared bivalved plaster spica. There was temporary wrist drop following the operation, which cleared up after six weeks. Final check-up showed firm bony union with normal restoration of function.

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HYSTERICAL FUGUES

REPORT OF CASES

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Hysteria was regarded by Hippocrates as the reactions of distress caused by wanderings of the uterus. This concept prevailed until early in the seventeenth century, when hysteria in men was first described. Sydenham¹ (1682) recognized mimicry of other diseases and conditions, together with great changeability, as features of hysteria. Although it has been given a medical interpretation from the beginning, it has been intimately associated with religion, mysticism and folklore. Charcot² has given an interesting description of miraculous cures at the temple of Aesculapius in ancient times. Doubtless some of these were cases of hysteria. Madden³ discussed many epidemic disorders of the mind which prevailed in Europe between the thirteenth and eighteenth centuries; among other phenomena he described witchcraft and epidemic hysteria. One of the proofs of witchery was the discovery of an anesthetic area on the body known as the "devil's claw." From a modern medical standpoint, such a discovery would always bring up the possibility of hysteria.

Hysteria is difficult to define. No one doubts that suggestion is a factor in its etiology as well as in its therapeutics. The personality disintegrates, usually temporarily, in the face of problems or stress. Various functions of the person, judged by the usual standards of health, are deleted or disordered, such as looking, listening, talking, walking, working, eating, sleeping, resting, remembering, thinking, feeling and awareness of the environment. Such predispositions, apparently of a constitutional nature, are common to many patients so afflicted. It would probably be the better part of

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1. Sydenham, T.: *Dissertatio epistolaris*, Geneva, S. de Tournes, 1684.

2. Charcot, J. M.: *La foi qui guérit*, Arch. de neurol. 25: 72, 1893.

3. Madden, R. R.: *Phantasmas, or Illusions and Fanaticisms*, 1857, 2 vols. London, Newby.

wisdom to recognize hysteria as an open field of biology in which there are ample opportunities for gaining more comprehensive knowledge.

The words fugue and fugitive have a common Latin origin in the word *fuga*, meaning flight. Terms more or less synonymous with fugue have been introduced into the literature on this subject, such as *déambulation*, *dromomania*, *poriomania*, *impulsive vagabondage*, *ambulatory automatism*, and in the German literature, *Wandertrieb*, *Wanderzustände* and *Fortlaufen*. The French in particular have presented numerous and thorough contributions on this interesting syndrome. Though some doubtful cases of fugue had been reported earlier, Tardieu,⁴ in 1872, reported the case of a joiner who left his workbench and tools and went 60 leagues from his home; at the expiration of eight days he returned, not knowing why he had gone. In 1877, Legrand du Saulle⁵ reported the exceptional case of a patient who, setting out from Paris, awakened on the boat before the city of Bombay. In 1878, Echeverria⁶ of New York reported fugues in two cases of epilepsy. Tissie,⁷ in 1887, discussed fugues at length in his thesis on "deranged wanderers." Charcot,⁸ in 1888, first used the term ambulatory automatism in connection with a case of epilepsy. Duponchel,⁹ in 1888, after Charcot's study, published a paper in which he attempted to discriminate between types of fugue. Subsequent to this date, fugues were described in alcoholism, manic-depressive psychosis, dementia praecox, hysteria and other neuroses, epilepsy, dementia paralytica, following trauma, and associated with uremia, malaria and other diseases. The necessity for accurate clinical differentiation was reflected in the extensive literature bearing on this subject. Since the majority of fugues seemed to be hysterical or epileptic in origin, differentiation of the two appeared of especial interest.

Definitions of fugue or ambulatory automatism were numerous. Pitres¹⁰ defined a fugue as "a pathologic syndrome appearing in the form of intermittent attacks during which the patient leaves his home and makes an excursion or journey justified by no reasonable motive. The attack ended, the subject unexpectedly finds himself on an unknown road or in a strange town." Raymond,¹¹ in 1895, gave as the three cardinal symptoms of fugue: (1) an irresistible impulse to travel, (2) traveling accomplished in a regular, intelligent manner without mishap and (3) at the end of the impulsive action, complete loss of memory or amnesia covering the whole period of its duration. More recently, Cottu¹² and Parant¹³ gave the most comprehensive account of the various definitions of fugues and allied disorders.

A fugue may or may not be a feature of one of the personalities in dual or multiple personality. Somnambulism is defined as sleep-walking, or it may be regarded

as a fugue during sleep. Not uncommonly patients exhibit all of these phenomena, including amnesia, in the course of their illness.

In 1903, Heilbronner,¹⁴ in a thorough study of fugues, reported fifty-seven cases, giving age of onset, occupation, heredity, etiologic factors, associated nervous phenomena and frequency and duration of attacks. Of this group less than 20 per cent were definitely epileptic. He found it difficult or impossible to distinguish between fugues in hysterical and epileptic patients. From a medicolegal standpoint, he felt that the normal state of the patient rather than that of the fugue should be the basis of consideration.

Janet's¹⁵ studies of hysteria from a psychologic standpoint have been of great value. He regarded fugues as closely related to somnambulism but motivated by dominating ideas, occupying various degrees of conscious awareness. He reported several well studied cases.

In 1909, Benon and Froissart¹⁶ reviewed fugues from a historical standpoint and gave a complete bibliography up to that date. The great interest in the subject in the latter half of the last century has subsided. Since 1909, only occasional papers on the subject and reports of cases have appeared in the literature. Fox¹⁷ cited the case of a patient who recovered by the use of hypnotic suggestion. Dupré¹⁸ reported the case of a person who had a mania for childish myths and imaginary tales and whose fugue was colored by such fantasies. Dupré and Long-Landry¹⁹ reported a fugue in an elderly person who had a belief in his own divine abilities, not unlike one of my patients. The patient demonstrated catalepsy. Benon and Froissart²⁰ reported the relation of school and family influences to fugues in children. Stier²¹ also reported fugues in children; most of which he felt to be due to *petit mal*.

Numerous fugues occurred during the World War, only a small number of which have been reported. Logre²² and Barat²³ reported excellent examples of such. Gamlen²⁴ presented a detailed study of a case in which war experiences played a part. Mayer²⁵ gave an account of a fugue in a dual personality, not unlike one of my patients. And not to be overlooked are the press reports of the sudden vanishing of some person who is later identified, possibly far from home, unaware of his normal existence and often leading a life quite at variance with it. While such cases are by no means rare, they are always of great interest and afford excellent opportunities for the study of psychopathology. The history of three patients manifesting such phenomena, the remedies employed and the modes and circumstances of recovery are deemed worthy of report.

14. Heilbronner: Ueber Fugues und fugue-ähnliche Zustände, *Jahrb. f. Psychiat.* 23: 107, 1903.

15. Janet, P.: *Major Symptoms of Hysteria*, New York, The Macmillan Company, 1907.

16. Benon, R., and Froissart, P.: L'automatisme ambulaire, *Gaz. d. hôp.* 82: 1087, 1909.

17. Fox, C. D.: Report of a Case of Dissociated Personality Characterized by "Ambulatory States" and Ambulatory Automatism, which Recovered, *Am. J. Psychol.* 19: 1, 1907.

18. Dupré: Mythomanie infantile; un cas de fugue suivie de fabulation, *Encéphale* 4: 117, 1909.

19. Dupré and Long-Landry: Vieillesse; onirisme; fugue; catalepsie, *Encéphale* 4: 366, 1909.

20. Benon, R., and Froissart, P.: Les fugues de l'enfance influence des milieux scolaires et familiaux, *Ann. d'hyg.* 13: 244, 1910.

21. Stier, E.: Wandertrieb und pathologisches Fortlaufen bei Kindern, *Deutsche med. Wchnschr.* 39: 241, 1913.

22. Logre, B.-L.: Sur quelques cas de fugue pathologique devant l'ennemi, *Rev. neurol.* 30: 20, 1916.

23. Barat, L.: Une fugue confusionnelle en temps de guerre, *J. de psychol. norm. et path.* 11: 455, 1914.

24. Gamlen, R. L.: Analysis of Fugue, *Lancet* 2: 350 (Aug. 14) 1920.

25. Mayer, E. E.: The Dual Personality of C. A. M.: The Account of an Amnesic Fugue, *Tr. Sect. Nerv. & Ment. Dis., A. M. A.*, 1919, p. 59.

4. Tardieu, A.-A.: *Étude médico-légale sur la folie*, ed. 2, Paris, J.-B. Baillière & Cie, 1880, p. 141.

5. Legrand du Saulle, H.: *Étude médico-légale sur les épileptiques*, Paris, A. Delahye & Cie, 1877.

6. Echeverria, M. G.: *Considerations cliniques sur la folie épileptique*, *Cong. intern. de méd. ment.*, 1878, p. 247.

7. Tissie, P. A.: *Les aliénés voyageurs. Essai médico-psychologique*, Paris, O. Doin, 1887.

8. Charcot, J. M.: *Cas d'automatisme ambulaire comitial. Leçons du mardi à la Salpêtrière, Policliniques*, 1887-1888, Paris, A. Delahye & E. Lecrosnier, p. 247.

9. Duponchel, E.: Impulsions à la déambulation chez les militaires, *Ann. d'hyg. pub. et de méd. lég.* 20: 5, 1888.

10. Pitres: L'automatisme ambulaire ou vagabondage impulsif, *Rev. d. rev.*, 1894.

11. Raymond, cited by Cottu.¹²

12. Cottu, L.: *Contribution à l'étude des fugues, étude clinique, diagnostique, pronostique et médico-légale*, Paris, 1907.

13. Parant, V.: *Les fugues en psychiatrie*, Paris, 1910.

REPORT OF CASES

CASE 1.—W. F. S., aged 27, a mechanic, was admitted to the psychiatric wards of the Albany Hospital on April 2, 1931, by his wife and family physician. They stated that he had been absent from home since March 30 and that when found he was standing on a street corner in a nearby village. His home town was unfamiliar to him. His clothing was torn and covered with coal dust, and his shoe soles were worn to the stockings. In his pocket were a golf ball, a knife, a cartridge shell and two small perfume bottles. He carried his discharge papers from the navy and stated that having just been discharged from the navy, he was en route to his sister's home. When taken to his home he did not recognize his wife or his brother-in-law, and he denied being married. His marriage certificate and pictures of himself were also unrecognized. He did not like to stay with his wife because he said her husband might appear, become jealous and cause trouble. He felt that there was some kind of a "put up job" on him.

The physical, neurologic and laboratory examinations gave essentially negative results. The patient's head was large, and he gave no evidence of violence. He was of asthenic habitus.

Soon after admission to the hospital, he stated that his memory had been bad for a month or two and that he could not recall any of the events of the preceding three days except that he believed he had been walking from the Brooklyn Navy Yard. He remembered being dishonorably discharged from the navy for being away without official leave, but he could assign no reason for it. He recalled being in an aeroplane accident in the navy, and he gave some details of his earlier life, but these were not clear. He thought that it was the spring of 1930. He puzzled much over "that woman" (his wife), whom he could not place; however, he said that he must be "ill" and "something must be missing."

From his sister the following information was obtained: The patient was born in New Jersey. His parents separated and each married later; the patient never got along with his stepfather. He completed the sixth grade at the age of 14 and was regarded as a poor student. He had a bad temper, masturbated excessively and stuttered much all of his life. In his sleep he talked and imitated animal calls, but did not walk. He had never had convulsions. Mechanical things interested him, and he worked around automobiles and aeroplanes whenever he could. After leaving school he had many jobs in succession, but worked longest as a hydroplane mechanic. In June, 1927, he joined the navy and learned to fly. In the spring of 1930 he was slightly burned in a hydroplane accident and had to swim nearly 2 miles to safety. For three weeks he was hospitalized chiefly because he was "unnerved." When nervous he was very tremulous. After recovery he was given a month's leave; he then returned to his sister's home in G. At the end of the leave he married his sister's sister-in-law. The day after the wedding he returned to the navy yard but, because he was twelve hours late and had married without permission, he was compelled to remain in the yard two months. Several months later, on receiving word that his wife was ill, although refused leave, he visited her anyway. On return he was tried and found guilty and finally dishonorably discharged on Feb. 24, 1931. His wife, on learning this, informed him by telegram that she would have nothing more to do with him. He returned home at once, patched up his domestic trouble, and obtained a less desirable job than he led his family to believe he had. On March 5, his wife had a stillborn child. Before this she had been very irritable. When informed of the child's death, he fainted. On March 29, he had a quarrel with his wife; that night he talked in his sleep. On March 30, he went to work as usual but did not return to his home.

Hypnosis failed to bring out more than fragments of the fugue. Sodium amytal given intravenously seemed equally inefficacious. After awaking on April 13 after the administration of sodium amytal, his mind seemed unusually clear, and he wrote the following story: On returning from work on March 30 with \$72 he was "blackjacked" by two Negroes, after which he had a severe pain in his head. He poured water on his head from a pond nearby and tried to think things out. On searching his pockets he found his navy discharge papers; he then sought a recruiting officer to straighten out what he believed to be a mistake in these papers. He thought about

many naval experiences, believing himself to be in the navy, but he gave no thought to his family. He wandered about, finally finding a recruiting officer who told him where he was; this he soon forgot. Continuing his wanderings, he picked up a golf ball on a course along the way, and the shell of a cartridge which a policeman had shot at a dog injured in an automobile accident. Arriving at H., he secured a job shoveling coal, working at this only long enough to earn \$1.50. Finally he wandered to W., where his brother-in-law found him.

The patient gave a clear description of the whole fugue. He said his mind worked rapidly like a moving picture: There was no returning to thoughts that had gone by. The remainder of his stay in the hospital was uneventful. He repeated the same story several times, seemed somewhat overawed by his previous condition and was cheerful, pleasant and cooperative. As nearly as could be verified, the details he gave were correct. On April 18, he was discharged to his home.

CASE 2.—A middle-aged man was admitted to the psychiatric wards of the Albany Hospital on the evening of Sept. 3, 1932, by the police, who stated that he appeared at one of the stations and did not know who or where he was. From a receipt in his pocket, it was supposed his name was H. L. In his pockets were quantities of communistic literature.

The physical, neurologic and laboratory examinations gave essentially negative results. The patient was of asthenic habitus.

For the first forty-eight hours in the hospital the patient was quiet, seemed sleepy, gazed out of the window a great deal, held his head in his hands, and said that he had a headache. In response to questions about his home, birthplace, whether he had gone to school and whether he was single or married, he replied, "I don't know." When asked when he was born, he said, "1882." His refusal to eat necessitated feeding by tube. He slept fairly well; he dreamed, but no dreams were recorded. He remarked spontaneously about the beauty of the sunset. When asked to write his name, he made unintelligible scrawls and then wrote "cooperation, harmony, drift, reformation, transformation, elevation." When I asked why he wrote these, he said, "It's something that came across my mind." He then remarked that he saw things as if looking through a crystal; he could see numbers, balls and triangles, and these were symbols. He spoke much of numbers and their symbolic meaning, of the various periods of the universe, of ether, space, time, planetary movements and similar subjects. When alone, he also wrote several pages on such topics. When questioned, he closed his eyes to reply, the reason being that he received the answer from an "inner voice" within himself, and by looking, as it were, through a crystal. Mathematical calculations were done very well, and answers to questions of general information were given correctly.

During the second day, after being urgently pressed to eat by an intern, the patient said that his headache passed off and his mind became clear. He then gave a detailed account of his life. He was born in Norway. He had talked and walked in his sleep as a child, but had never had a convulsion. He attended school until 13½ years of age. He had been a sailor and had gone all over the world. He was a carpenter and yachting master, and had been married for twenty-six years and had eight children. He declared that his wife was mentally ill and that his home life was unhappy. Three years ago, the patient stated, he had had a similar attack of forgetfulness, which came on during a severe headache, and he had wandered from home. During the summer of 1932 his home had burned, and it was not adequately covered by insurance. To be an educated man and lead an ideal social life had been among his chief desires. His chief hobby had been reading books on sociology, psychology, philosophy, theosophy, religion, Christian science and similar subjects. He admitted using alcohol to excess at times, which made him feel like a "happy child." He stated that he had always been an open, friendly person.

His father had, in all probability, committed suicide. A sister had had a nervous breakdown. Two brothers are heavy drinkers.

The details of the fugue he explained in this way: He had gone from his home in K. to the home of his daughter in N. on September 2, and had retired with a severe headache. The next thing he knew he was in the hands of the police. He believed that the trip to Albany had been made by bus. Many details of his hospital care and treatment were recalled.

On September 8 he was discharged, returning to his home in a cheerful, happy state, cooperative and optimistic, believing that telepathy may be a factor in his case when he has a bad headache. A letter from the patient in April, 1933, indicates that he is well but much preoccupied with various symbolic designs to bring people together under one system of happiness, usefulness and enlightenment.

CASE 3.—A young woman was admitted to the psychiatric wards of the Albany Hospital on Dec. 31, 1932, by the Travelers' Aid because she could neither remember her name nor give information about herself. She had apparently arrived recently by bus. There were no identifying marks on her clothing or traveling bag.

Her physical and laboratory examinations revealed the following: She was a fairly well developed, well nourished young woman, with a large head, especially the frontal bosses. She was of asthenic habitus. The prominence of the lower ribs suggested the possibility of a past rachitis. Pregnancy of about three months' duration was found. The Wassermann reaction of the blood was negative. Periarteritis of the retinal vessels of the left eye was found. A cyst at the angle of the right jaw and three unerupted molars in the upper jaw were disclosed by roentgen examination. There were several carious teeth. The blood pressure was 104 systolic and 55 diastolic. The neurologic examination gave negative results objectively except for anesthesia and analgesia, which were found on the left side of the head above the left ear and extending nearly to the vertex of the skull. Corneal anesthesia was found on the left. A roentgenogram of the skull showed some irregular atrophic changes such as are usually seen in craniostenosis.

In the hospital the patient wept frequently and complained of pain in the left side of her head. There was occasional nausea and vomiting in the mornings. She ate poorly. On the first day she could give no account of herself whatsoever. She did not know the date. Perplexed and worried by her plight, she seemed to struggle to remember, scratching her head and presenting the appearance of being in deep thought. During the first night she awoke and stated that her name seemed to be P. H., that she was 25 years old, had been married since 1929, and had had a miscarriage a year before. She said that she had finished high school and had worked in an office. She spoke about San Francisco and Los Angeles, even mentioning streets and house numbers there, some of which were later verified. She spoke of a girl friend by the name of Jones, and of a sister. She spoke of her father, but it seemed to her that her mother had died several years previously. She seemed to recall vaguely coming with her husband late in 1932 by steamer through the Panama Canal to New York, where her husband had left her to make a trip to Africa. She intimated that she had been jealous of the attentions paid to her husband by another woman, S. T. She seemed to recall an accident on Hallowe'en night in which she was struck by an automobile and seriously injured. She thought she had been taken to a place, had been cared for by a nurse, and the people seemed strange to her. She had no idea how she had arrived in Albany. The same story was repeated many times, the patient always appearing as if grossly indifferent about it or in a reverie just before sleep. Hypnotism was tried once, with no success. She was given large doses of phenobarbital by mouth and sodium amytal intramuscularly to induce somnolence. It was hoped that by arousing her from such states and talking with her more information might be obtained. In such somnolent states she talked as if her father were present and gave some new information relative to her status as P. H. After awakening, she said she had had a vivid dream of being at home in California. Word association and free association studies gave no new information.

On January 10, she was told about her pregnancy. She showed some concern about it, but her general state was little changed.

On January 26 (twenty-seven days after admission), she fell to the floor, wept bitterly, and then declared that her name was J. M. She did not know the physicians and nurses whom P. H. had come to know. In the next few days she sometimes declared herself to be P. H. and sometimes J. M. As J. M. she gave the name of her sister, which was confirmed by long distance telephone. When her sister arrived in a few days she

did not recognize her, but rapidly thereafter regained her memory for most of the events of her life.

From the sister we learned that J. M. was born in a southern seaboard state; that she is 20 years of age, single, and has never been in California. She had graduated from high school the summer before. She is one of a family of ten children; her father is living, but her mother had died of a "stroke" some years before. The patient's father and brother were so strict with her that life at home was not congenial. She had always been easy-going, friendly and unemotional, but had kept things to herself. As a child she had talked and walked in her sleep. She had not been known previously to have an amnesia, although her sister had known her to day-dream occasionally. Headaches had occurred in childhood, but there was no history of convulsions. About two months previous to admission, the patient had come to live with her sister in C. She had presumably secured a position in a distant city, B., and on December 29, at 1 p. m., had departed for that city by bus. On January 3, her sister had received mail from her with the B. postmark on it, telling of her safe arrival. The sister heard no more from her, and her supposed place of employment knew nothing of her. Her sister was about to broadcast for her when called by us.

After the patient's amnesia had cleared, she remembered her bus trip to B. It was during this trip that she had read a story in which P. H. appears as a character from California. She tried to get employment in B., but was unsuccessful and decided to return by bus to New York. Her memory could go no further than this.

On February 3, after being given $3\frac{3}{4}$ grains (0.2436 Gm.) of sodium amytal intramuscularly, she told the following story: On leaving the hotel in B., she declared that she was accosted by three men who took her purse and placed her in a car. Apparently this was the onset of the fugue, since after this she remembered very little until she found herself in the hospital in Albany as J. M. The story was repeated a number of times with only minor variations. She worried somewhat about the pregnancy, the details of which were explained in two different ways, causing some doubt as to the validity of her stories; one of these was that conception had taken place while asleep. Otherwise, she seemed to be in complete contact with her environment and past history, with the exception of the trip from B. to Albany, so far as could be verified. The anesthesia of the left side of the head and the cornea disappeared after she returned to her natural state. On February 5, she was discharged into the custody of her sister.

The outstanding features in the history of these patients were personal problems of considerable magnitude. Their childhood environments were none too congenial. There was history of severe headache in the early life of two of these patients. A history of convulsions was not elicited. Somnambulism and day-dreaming had been present in two cases, while talking in the sleep was common to all. All were of fairly open personality; all were of asthenic habitus. The school achievement of two could be regarded as somewhat subnormal. Two had followed earlier occupations in which travel and adventure are common. According to the history, the amnesic fugues of two patients were initiated by assault and that of the third by severe headache. While the amnesia for much of their past life disappeared in all of them, details of travel in the fugues of two remain somewhat obscure.

As viewed by laymen, fugues and amnesias savor strongly of malingering and prevarication. Amnesias are usually not complete even when they seem to be. In the most profound amnesia the patient fails to recognize the familiar; however, the forgetting of names and events implies earlier knowledge of them. The relation of such amnesias to cause and effect is difficult to understand. The language of the amnesia and fugue must be given broad interpretation all the way from slight implication to literalness. In the

amnesic state the behavior and personality of the patients were quite different from that of their normal state; this fact was recognized by the patients themselves.

Hypnosis in the cases reported here did not prove to be a better method of bringing about recovery of the amnesia than sedatives or narcotic drugs. Recovery is often sudden and spectacular. After apparent recovery, fragments of amnesia often persist. A complete review and assimilation of all the amnesic material by the patient is an essential in treatment. The relief from annoying personal problems possibly afforded by the amnesia is not negligible. Freud's contention that one tends to forget what is unpleasant to one may be especially apropos in "fugues."

SUMMARY

1. A brief statement of the nomenclature of hysteria and fugues, together with definitions and synonyms, is given.

2. The relation of fugues to other diseases is presented briefly.

3. The outstanding literature bearing on the subject of fugues is reviewed.

4. Three patients with amnesic fugues are described in detail, giving the circumstances of onset and recovery, with treatment employed.

5. The features common to these patients were personal problems of a distressing nature, history of previous talking in sleep and uncongenial home environment. All were of asthenic habitus.

6. Narcosis with sodium amytal or similar drugs proved in my experience as effectual as hypnosis for invading the amnesia.

ABSTRACT OF DISCUSSION

DR. FREDERICK P. MOERSCH, Rochester, Minn.: I have been interested in fugues for some time and have divided the more common states of ambulatory automatism under the three headings of hysteria, epilepsy and migraine. The hysterical fugue is by all means the most common. At times it is exceedingly difficult to differentiate the hysterical fugue from the epileptic fugue. As a rule, the hysterical fugue is of longer duration, it occurs more frequently and the patients are less prone to periods of violence. At times it is almost impossible to make a differential diagnosis unless the patient is kept under observation for a prolonged period. Short fugues are often misinterpreted as petit mal equivalents. Some of these fugues are the result of focal cerebral lesions, and several of these patients later proved to have a brain tumor. Fugues associated with migraine, while rather rare, do occur and usually can be diagnosed from the history of preceding or associated migraine attacks. Two of Dr. Ziegler's patients had headaches, and I should like to ask him if it is possible that these patients might have had associated migraine. Dr. Ziegler stated that most of the fugues are hysterical, and I think that is correct. Most of these reactions are on an emotional basis, either conscious or subconscious, and at times it is difficult to be sure whether one is dealing with a conscious factor that is real or with a fictitious one. Not infrequently the medicolegal aspect and also the aspect of malingering enter into the question of fugues, and here again one has difficulty in differentiating the type of condition one is dealing with. I believe that the article by Hugh T. Patrick in 1907 on "Ambulatory Automatism" was the first paper in this country which distinctly brought out the fact that hysterical fugues were very common and that many fugues previously considered epileptic were really hysterical. Dr. Patrick stated that at times it is exceedingly difficult to distinguish the simulated from the real and to satisfy oneself that the case is one of disease and not of devilry.

DR. GEORGE W. HALL, Chicago: I wish to emphasize the point Dr. Moersch brought out that these cases should not

always be considered functional in character. Not long ago a minister announced from his pulpit that he had been preaching the wrong doctrine for a number of years and that he wanted to apologize and present his resignation. It came like thunder out of a clear sky to the congregation. In a few days it was found that he had to go down to see the fast mail train go through the small town where he lived. If his wife sent him to the store to buy several parcels, he would buy one parcel and bring it back, and then he would get another one and bring that back, and so on, until all the purchases were made. A few days after that he was missing from his home. About two weeks later he was found down in Alabama. His shoes were worn out, and his clothing was much worn. He went to a minister's house and told the minister who he was, asking him to telegraph his wife. A few months later a large tumor was found at autopsy, a glioma, filling one hemisphere and extending into the other. On another occasion I remember a brakeman, working on a coal car of the Illinois Central Railroad in Tennessee. He fell off the coal car. Three weeks later he was found walking into New Orleans with an entirely strange suit on. His hands were blistered and he had more money in his pocket than he had when he fell off the car. He knew nothing about what happened in the interval. One should keep in mind the possibility of organic brain disease in a certain percentage of these cases.

DR. EDWARD E. MAYER, Pittsburgh: The last paper recalls to my mind the twilight state or *daemmerzustand* of Kraepelin, which is often mistaken for a hysterical fugue. A partial lost identity and consequent wandering from home in a twilight state may follow fatigue or strain, accompanied by an evident toxic state. It may, however, be precipitated by an emotional situation. The mental confusion and only partial blotting out of identity should permit a differentiation from the hysterical fugues. I have several times testified in cases of *daemmerzustand*. On one occasion, a man committed bigamy in an unmistakable twilight state. In another, a patient was arrested for theft, committed during a fugue of this nature. I imagine all neurologists have become familiar with amnesia and a consequent fugue that occasionally follows the use of insulin. The clinical picture of hypoglycemia includes amnesic attacks that must be separated from hysterical fugues. Also, so-called psychic automatism due to glandular imbalance needs occasionally to be differentiated. It must, of course, always be kept in mind that fugues occur in the earliest stages of schizophrenia. Bourget has called attention to hebephrenic patients whose history reveals transitory fugues years in advance of actual psychotic symptoms. Often they were diagnosed as hysterical fugues. Hysteria is a term which, despite its antiquity, is used without a universal meaning being accepted for it. We know what it is but cannot explain or define it. I wonder whether some day neurologists will be able to analyze personality specifically aside from generalities like "flight from reality" and "protest and defense mechanism," so that we may distinguish schizophrenic and hysterical persons before they break down with an amnesia and a fugue. I recognize that a hysterical fugue is a reaction to an apparently unsurmountable obstacle, but why does the psychic conflict cause a fugue?

DR. THEODORE DILLER, Pittsburgh: About 300 years ago there was a famous witch finder in England by the name of Matthew Hopkins who traveled from county to county finding his witches. On his evidence something like 200 witches, or supposed witches, were convicted and executed in England. His method of detecting a witch was by means of a long needle, going over the body and ascertaining whether or not there were places that were insensitive or, as would be said today, anesthetic or analgesic. It was chiefly on this evidence that the witches were detected. I suspect, however, that a good many of those who showed anesthesia developed what would now be called the hysterical state on account of their accusation and the emotional upheaval that accompanied it. It is interesting to remember that in the great prevalence of witchcraft 300 years ago everybody believed it, including Sir Thomas Brown and Chief Justice Hales of England. The question of malingering is a very difficult one. Several years ago I had a patient who, I was convinced, was an instance of hysterical amnesia. But it was impossible to convince the legal authorities of this. I don't know of any way of doing it. I should

like to ask Dr. Ziegler to tell, if he can, how one can prove an instance of so-called hysterical amnesia, or fugue, to be the real thing and not faked.

DR. LLOYD H. ZIEGLER, Albany, N. Y.: I wish to state with regard to Dr. Moersch's question that two of the patients had severe periodic headaches which were considered possible migrainous attacks. The other patient apparently did not have much headache. I am glad Dr. Hall brought up the matter of patients with brain lesions, such as tumor, behaving in a manner similar to that I have described. In the extensive literature on this subject, fugues are described in association with many diseases, some of which may be rather serious intracranial lesions. I have seen patients who have been given insulin develop symptoms resembling a fugue. Patients with arteriosclerosis of the central nervous system may behave likewise. Careful scrutiny will usually reveal the difference between such patients and the type I have described. The importance of very thorough examination of the patient is apparent. I am grateful to Dr. Diller for embellishing the historical side of this subject. His question as to whether certain aspects of the fugue are real or imaginary raises a philosophic problem. Biologic facts do not have to be somatic to be real. To split the individual into "mental" and "physical" and to regard the physical as real and the mental as imaginary is fallacious. Lawyers and courts often view such matters from a vantage point so dissimilar from the physician's that it is difficult for them to understand each other. The education of lawyers to a biologic point of view is a task of major importance.

PELLAGRA

REVIEW OF CASES WITH SPECIAL REFERENCE
TO THE GASTRIC SECRETIONS

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Recent studies in which particular attention has been given to the gastric secretions in pellagra are those of Givens,¹ Guthrie² and Boggs and Padget.³ In addition, Bloomfield and Pollard,⁴ in a recent monograph on gastric anacidity, have tabulated the observations of several other authors whose studies were based on smaller series of cases. Givens¹ studied the gastric acid values following Ewald meal stimulation in 100 pellagrins, twenty-four of whom were children. Anacidity was found in 39 per cent of his cases, but its occurrence apparently bore no relationship either to age or sex or to the duration and recurrences of the disease. Guthrie,² in a larger series, found an absence of hydrochloric acid in 68.9 per cent and 62.8 per cent of all of his cases, and in 67.5 per cent of forty patients in whom histamine had been used as a stimulant to gastric secretion. In their report of 102 instances of pellagra, Boggs and Padget³ state that achlorhydria was present in 90 per cent of the patients in whom gastric analysis was done. The method employed was not mentioned.

The long observed association between achlorhydria and pellagra has thus been definitely established. While

these studies have served to clarify our understanding of the relationship, many of its important features remain obscure. It has been our purpose in this investigation to note the incidence of achlorhydria in pellagra, to observe particularly its association with the various

TABLE 1.—Fundamental Data in One Hundred and Seven Cases

	Number of Cases
Males.....	52
Females.....	55
White.....	94
Negro.....	13
Etiology:	
Dietary.....	72
Alcoholism.....	14
Pyloric obstruction.....	1
Undetermined.....	20
Distribution of dermatitis:	
Hands.....	102
Feet.....	38
Neck, face, chest, genitalia and buttocks.....	54
State of nutrition:	
Malnutrition.....	77
Normal.....	27
Unrecorded.....	3
Diarrhea.....	59
Normal bowel movements.....	29
Constipation.....	19
Bariatrics.....	26

clinical manifestations of that disease and to ascertain if in that relationship some factor or factors may exist which might influence its course or severity.

Observations have been confined strictly to those patients who presented the classic manifestations of pellagra. One hundred and seven cases have been so diagnosed and studied in the medical wards of the University of Virginia Hospital during the eighteen year period from 1915 to 1933. These patients were, for the most part, drawn from the rural districts of central piedmont Virginia. It is believed, therefore, that such a series offers an average picture of the disease as it is seen in the southern part of the United States. Of the 107 patients, 94 were white and 13 were Negroes, a ratio of eight to one, which decreased to two to one when corrected for the proportion of white to Negro admissions (four to one) at this hospital. In only fourteen cases was there a history of chronic alcoholism, a factor noted as more prominent in the reports of Shattuck,⁵ of Boggs and Padget³ and of Klauder and Winkelman.⁶ Table 1 gives the important fundamental data regarding these patients; additional data are reserved for subsequent detailed analysis.

TABLE 2.—Gastric Analyses (One Hundred and Seven Cases of Pellagra)

Type of Meal	Free HCl Present		Free HCl Absent		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Ewald.....	16	29.1	39	70.9	55	100
Alcohol.....	7	50.0	7	70.0	14	100
Alcohol and histamine.....	7	18.0	31	82.0	38	100
Total cases.....	30	28.6	77	72.0	107	100

Seventy-two of these patients gave a history of a diet inadequate, particularly, in meat, fresh eggs, milk and fresh vegetables. In forty-six, or 43 per cent, the onset was between February and June, which agrees with the seasonal incidence reported by Boggs and Padget³ and others. Complications occurred, but none were considered important from the standpoint of this

From the Department of Internal Medicine, University of Virginia Department of Medicine.
Read before the Section on Practice of Medicine at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.
1. Givens, M. H.: Chemical Analysis of the Stomach Contents from 100 Pellagrins, *Am. J. M. Sc.* 155:221 (Feb.) 1918.
2. Guthrie, J. B.: Achlorhydria in Pellagra, *J. Trop. Med.* 35:71 (March 1) 1932.
3. Boggs, T. R., and Padget, Paul: Pellagra, Analysis of 102 Cases, *Bull. Johns Hopkins Hosp.* 50:21 (Jan.) 1932.
4. Bloomfield, A. L., and Pollard, W. S.: Gastric Acidity: Its Relations to Disease, New York, Macmillan Company, 1933.

5. Shattuck, G. C.: Scurvy, Pellagra and Sprue at the Boston City Hospital, *New England J. Med.* 199:936 (Nov. 15) 1928.
6. Klauder, J. V., and Winkelman, N. W.: Pellagra Among Chronic Alcoholic Addicts, *J. A. M. A.* 90:364 (Feb. 4) 1928.

study. One gastric ulcer was the only recognized abnormality of the gastro-intestinal tract. Dermatitis was present in all cases. Without it, the diagnosis would be questionable.

In the early observations the Ewald test meal was used as a stimulant to gastric secretion. In this series fifty-five cases were studied by this method. Later, 99 cc. of 7 per cent alcohol with phenolphthalein served as a test meal in fourteen patients; more recently, histamine injections in doses of from 0.5 to 1 mg. subcutaneously have been used subsequent to alcohol meals in thirty-eight patients.

Table 2 represents the results of gastric analyses in the whole series according to the method used. The percentage of patients showing no free hydrochloric acid approximates the figures of Guthrie² and others and is much higher than that reported by Givens.¹ The low percentage obtained by Givens may be attributed to the fact that his series included a number of children and young adults. The use of histamine did not materially change the anacidity percentage, suggesting that a "true" anacidity quite frequently exists in pellagra.

The recent work of Polland⁷ on normal individuals shows the necessity for taking age into account in relation to the gastric secretions. He shows that the percentage of normal individuals having anacidity

TABLE 3.—Correlation of Gastric Analysis and Age and Sex

Type of Meal	Age	Sex*	Free HCl Present				Free HCl Absent			
			10 to 40		40 to 50		10 to 40		40 to 80	
			♂	♀	♂	♀	♂	♀	♂	♀
Ewald.....	3	3	8	2	5	10	12	12		
Alcohol.....	2	0	4	1	0	2	1	4		
Alcohol and histamine.....	1	4	1	1	2	7	14	8		
Total cases.....	6	7	13	4	7	19	27	24		
Total cases, both sexes.....	13								51	

* In these tables, ♂ indicates male; ♀, female.

increases with age, from 2.9 per cent in men and 4.7 per cent in women in the age period 20-29 years to 28.6 per cent in men and 28.6 per cent in women over 70 years of age, an abrupt increase occurring about middle-life. With these factors in mind, we analyzed this series according to Polland's table, in order to bring out the differences between the cases occurring in the first and in the last half of life.

In thirty-nine patients under 40 years of age, twenty-six, or 66 $\frac{2}{3}$ per cent, showed an absence of free hydrochloric acid. From Polland's data on normal individuals, only about 4.5 per cent would have been expected to show this sign. In sixty-eight patients over 40 years of age, fifty-one, or 75 per cent, had no free hydrochloric acid. About 21 per cent of normal or average individuals during this period of life may be expected to have anacidity. There is, therefore, among pellagrins a definite excess of individuals with an absence of free hydrochloric acid. The difference in figures cited by various authors may be in part explained by different age compositions.

If, in addition, there were included the patients with a partial but not complete suppression of free acid, using the arbitrary figure of 18 adopted by Givens¹ and Guthrie² as indicating deficient acid, then 13 more of the 107 patients would be added to the 77 showing less than normal secretion.

To determine whether loss of ability to secrete free hydrochloric acid is temporary or permanent, the gastric analyses were repeated in twenty-one cases several months to years after the initial observation. The results are shown in table 4.

In most cases the original admission was for pellagra. A number of patients returned later with a recurrence or in response to a follow-up letter. In some instances the patient had been admitted to the hospital for another

TABLE 4.—Repeated Gastric Analyses

Sex	Age	Date	Free HCl	Type of Meal	Comment	
					Free HCl Present—Later	Free HCl
♂	54	8/19/28	28	E	Pellagra	
		5/19/33	49	F	No active pellagra	
♂	50	5/29/27	47	E	Pellagra	
		3/17/33	30	A	No active pellagra	
♂	23	8/ 2/24	10	E	Pulmonary tuberculosis	
		9/21/26	45	E	Pellagra	
♂	50	4/ 8/23	30	F	Alcoholism and syphilis	
		7/18/23	13	F	Gastritis and syphilis	
		1/ 4/26	12	E	Sciatica	
		4/ 1/27	19	E	Pellagra	
Free HCl Present—Later No Free HCl						
♂	56	6/12/21	20	E	Pellagra	
		5/ 9/22	0	E	Pellagra	
		5/23/22	0	E	Pellagra	
♀	38	6/23/30	20	A & H	Pellagra	
		8/ 6/30	0	A & H	Pellagra	
♀	44	7/27/28	15	F	Pellagra	
		6/ 5/30	0	A	Pellagra	
♂	23	3/18/32	0	A & H	Pellagra	
		5/24/33	0	A & H	No active pellagra; attack March, 1933	
No Free HCl Present—Later No Free HCl						
♂	55	5/23/21	0	E	Chronic gastritis	
		6/23/22	0	E	Pellagra	
♀	55	6/ 2/21	0	E	No disease	
		4/16/31	0	A & H	Pellagra	
♀	33	11/30/29	0	E	Pellagra	
		4/20/32	0	A & H	No pellagra	
		3/18/33	0	A & H	Mild pellagra	
♀	42	3/24/22	0	E	Chronic gastritis	
		6/ 1/23	0	E	Pellagra	
♂	30	3/29/22	0	E	Pellagra	
		2/19/30	0	F	Pellagra	
		5/12/33	0	A & H	No pellagra	
♀	54	7/31/26	0	E	Pellagra	
		7/ 2/29	0	E	Pellagra	
♀	27	7/23/30	0	A & H	Pellagra	
		9/12/31	0	A & H	Psychosis, later postero-lateral sclerosis	
♂	60	5/23/33	0	A & H	No pellagra	
		7/24/31	0	A & H	Pellagra	
		5/24/33	0	A & H	No pellagra	
♀	50	5/21/31	0	A & H	Pellagra	
		5/31/33	0	H	Pellagra	
No Free HCl—Later Free HCl						
♂	45	4/13/25	0	E	Pellagra	
		4/27/26	0	E	Pellagra	
		10/14/26	20	E	Pellagra	
		3/22/28	0	E	Pellagra	
♂	55	8/16/28	0	E	Pellagra	
		9/21/23	0	E	Pellagra	
		3/19/29	50	E	No pellagra	
♀	27	7/ 1/29	0	E	Pellagra	
		5/ 5/33	15	A & H	No pellagra	
♀	26	10/ 2/28	0	E	Pellagra	
		5/24/33	12	A & H	No active pellagra; attack March, 1933	

complaint before the onset of pellagra. The observations in table 4 suggest that the anacidity of pellagra may be temporary or permanent. While the latter group was larger in this series, there were several patients who on a later test were found to give reasonably normal results. It would appear, therefore, that either a "false" or a "true" anacidity may be present in this disease.

In six of nine instances there was apparently a permanent loss of the ability to secrete free hydrochloric acid, as determined by the alcohol and histamine tests. No case in which the original test made with histamine showed an absence of free hydrochloric acid

7. Polland, W. S., quoted by Bloomfield and Polland.⁴

showed acid on subsequent examination, but possibly this may occur.

Diarrhea is frequently encountered in pellagra. Guthrie² has suggested that it is more frequent in patients having no free hydrochloric acid. Stomatitis is also a common symptom and is frequently associated

TABLE 5.—Correlation of Gastric Analysis and Diarrhea

	Diarrhea Present		Diarrhea Absent		Total	
	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent
Free HCl present.....	14	46.0	16	54.0	30	100
Free HCl absent.....	43	55.4	32	42.6	77	100
Total cases.....	59	55.2	48	44.8	107	100

with diarrhea. In tables 5 and 6, stomatitis, diarrhea and the analyses of the stomach contents are correlated.

It will be seen that diarrhea was present in 58.4 per cent of the patients with achlorhydria and in 46.6 per cent with free hydrochloric acid. These figures correspond quite closely to those of Guthrie.² It seems obvious, then, that diarrhea is not necessarily dependent on an absence of free hydrochloric acid. Stomatitis, which is another manifestation of involvement of the gastro-intestinal tract, might logically be expected to be correlated with the anacidity, but the results given in table 6 show definitely that this is not necessarily true.

In table 7 the gastric analyses are correlated with the signs and symptoms of lesions in the brain and nervous system. As the pathology of pellagra is more intensively studied, the frequency of lesions in the brain, spinal cord, and peripheral and autonomic nervous system is emphasized. The lesions found are similar to those found in pernicious anemia, sprue and

TABLE 6.—Correlation of Gastric Analysis and Stomatitis

	Stomatitis Present		Stomatitis Absent		Total	
	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent
Free HCl present.....	15	50.0	15	50.0	30	100
Free HCl absent.....	43	55.8	34	44.2	77	100
Total cases.....	58		49		107	

posterolateral sclerosis associated with gastric anacidity alone, according to Gildea, Kattwinkel and Castle.⁸ The lesion is degenerative in type and attacks the posterior and lateral columns of the spinal cord most frequently. Grinker⁹ emphasizes the rarity of this lesion in patients having free hydrochloric acid in the stomach contents. It should be noted in table 7 that signs suggestive of posterolateral degeneration (exaggerated reflexes, diminished or absent reflexes, ankle and patellar clonus, positive Babinski sign, paresthesia and ataxia) are found a little more frequently in the patients having no free hydrochloric acid. Nevertheless, it is apparent that the signs and symptoms of cord involvement may also occur when free hydrochloric acid is present in the stomach contents. A careful history will usually show the earliest symptoms to be burning, with numbness and tingling in the hands and feet. These may be felt a week or more before the dermatitis appears. This

suggests that the earliest lesion occurs in the peripheral nervous system, a point also made by Lynch.¹⁰

Contributions to the knowledge of pernicious anemia have stimulated the investigation of anacidity in its relationship to anemia in general, particularly of late to the hypochromic type. In table 8 the gastric analyses are correlated with hemoglobin and erythrocyte determinations.

Sixteen of the twenty-four patients so analyzed, or 66⅔ per cent of those showing free hydrochloric acid in the stomach contents, have no anemia, while forty-six of the sixty-one patients, 77 per cent, with no free hydrochloric acid have normal erythrocyte counts and hemoglobin, thus indicating that as far as this series is concerned the lack of free acid does not predispose to anemia. There is a slight preponderance of females in the group having no free hydrochloric acid, but it is not thought to be significant. It is striking that pellagra rarely leads to severe anemia, although it is frequently associated with anacidity. The suggestion has been made that because of this anacidity and of the similarity

TABLE 7.—Correlation of Gastric Analysis with Symptoms and Signs of Lesions in the Brain and Nervous System

	Cord Symptoms				Mental Symptoms			
	Present		Absent		Present		Absent	
	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent
Free HCl present.....	13	54	11	46	10	41	14	59
Free HCl absent.....	38	63	22	37	22	37	38	63
Total cases.....	51		33		32		52	

of many signs and symptoms, a relationship between this disease and pernicious anemia may exist. Spies and Payne,¹¹ however, have shown that the gastric juice of a pellagrin, containing no free hydrochloric acid, when incubated with beef, is capable of eliciting a characteristic reticulocyte response in pernicious anemia. Therefore, it would appear that the absence of remarkable changes in the red count and hemoglobin in pellagra associated with the anacidity further divorces the two conditions.

Twenty-six patients gave a history of from one to eleven recurrences, and four had had symptoms persisting for periods of from four months to two years. Only eight of these had free hydrochloric acid. In two of the eight the acid was present on the first admission but subsequently disappeared. In two others the free

TABLE 8.—Correlation of Gastric Analysis and Anemia

Red blood cells.....	4 M plus		3 to 4 M		2 to 3 M	
Average hemoglobin...	50	79.5	73	68	55	56
Sex.....	♂	♀	♂	♀	♂	♀
Free HCl present.....	10	6	4	2	0	2
Free HCl absent.....	20	26	5	7	1	2
Total cases.....	30	32	9	9	1	4

hydrochloric acid was present only once in several analyses, thus leaving four cases showing persistent acid. Thirteen of the patients died while under treatment in the hospital. Of these eleven had no free hydrochloric acid, and one other responded only after

8. Gildea, E. F.; Kattwinkel, E. E., and Castle, W. B.: Experimental Combined System Disease, *New England J. Med.* 202: 523 (March 13) 1930.

9. Grinker, R. R.: Pernicious Anemia, Achylia Gastrica, Combined Cord Degeneration and Their Relationships, *Arch. Int. Med.* 38: 202 (Sept.) 1926.

10. Lynch, K. M.: Structural Changes in Pellagra, *J. South Carolina M. A.* 28: 202 (Aug.) 1932.

11. Spies, T. D., and Payne, Warren: A Study of the Etiological Relationship Between Pellagra and Pernicious Anemia, *J. Clin. Investigation* 12: 229 (Jan.) 1933.

histamine stimulation. In this series it would appear that an absence of free hydrochloric acid indicated a more severe prognosis in relation to recurrence and death.

SUMMARY

The results of gastric analyses in 107 typical endemic cases of pellagra admitted to the University of Virginia Hospital during the past eighteen years confirm the results found by previous observers in regard to the common occurrence of achlorhydria in this disease, even after due allowance has been made for the presence of this condition in normal persons of different ages. The examination of some patients indicated that this condition might be more or less permanent (true anacidity), but in a few instances some degree of normal function returned. The assumption, however, that the presence of achlorhydria was necessarily correlated with such other manifestations as stomatitis, diarrhea, involvement of the central nervous system and anemia was not borne out by this study. There is no implication that achlorhydria is a primary or uniformly antecedent manifestation of this deficiency disease syndrome.

ABSTRACT OF DISCUSSION

DR. T. D. SPIES, Cleveland: It has been known for some time that achlorhydria is associated with pellagra, and now Dr. Mulholland demonstrates for the first time that this effect is likely to be permanent. My own observations confirm and support his studies. I believe that the lasting, permanent changes found in the gastric juice result from atrophy of the gastric glands. While studying the relationship of pellagra to pernicious anemia, my associates and I showed that pellagrins have the intrinsic factor in their gastric juice which Castle has shown to be absent in the gastric contents of patients with pernicious anemia. In addition, when pellagrins with achylia go back to their original habitat, they do not develop either pernicious anemia or pellagra if their diet is adequate. It is my impression that pellagra, sprue and other similar conditions are probably closely related in that their development may be dependent on an inadequate food intake or assimilation. It is difficult to draw any definite conclusions as to the exact chemical substances concerned in the pathogenesis of these diseases when the greatest investigators of anemia and pellagra have chosen to speak of autoclaved yeast and other foodstuffs as a specific vitamin. Autoclaved yeast contains many essential proteins, fats, carbohydrates and minerals and, according to my own belief and that of others, several accessory food substances and not just one, as the term vitamin B₁ or G might connote. With Dr. Mulholland's observations in mind, I should again like to say that this work is of fundamental importance.

DR. W. H. SEBRELL, JR., Washington, D. C.: Dr. Mulholland has presented an interesting study of achlorhydria in pellagra. More clinical studies on pellagra, such as this, are needed, instead of so many presentations of opinions about the etiology, with little or no proof to support them. The studies of Goldberger and his associates have conclusively proved that pellagra is due to a faulty diet. Experience in treatment indicates that success depends directly on the extent to which a proper diet is used. The physician who puts his faith in the pharmacopeia for his treatment of pellagra will be sadly disappointed. In fourteen of Dr. Mulholland's patients, alcohol is given as a factor in the etiology. Many reports of sporadic cases of pellagra give a history of alcoholism, although this is certainly not a factor in endemic pellagra. In connection with alcoholism and pellagra, the old term pseudopellagra has recently reappeared in the literature. While this term probably includes other conditions, that is, cases of missed diagnosis, it also undoubtedly includes many cases of true pellagra. There is no longer any excuse for the use of the term pseudopellagra. Dr. Mulholland had thirteen deaths in his series, a death rate of about 12 per cent. Many of the older reports in the literature give death rates of 30 per cent and over, probably because the

more severely affected patients go to the hospitals and proper dietetic treatment was unknown. Goldberger found that the death rate of the endemic disease did not exceed 3 per cent. He also made the interesting observation that the disease is predominantly a disease of childhood between the ages of 2 and 15 years. This does not show up in hospital reports, probably because of the relative mildness of the disease in children. From the point of view of preventive medicine, the outlook in pellagra at present is favorable. The depression has caused a considerable increase in the home production of foods in the cotton belt, where about 90 per cent of the pellagra in this country occurs. The reported case rate in Mississippi has fallen from 774.8 per hundred thousand in 1928 to 288.2 in 1932, and it may be safely predicted that as long as the production of food crops continues in this area the incidence of pellagra will continue to be very low.

DR. JAMES S. MCLESTER, Birmingham, Ala: The last word in pellagra has not yet been said. I am thoroughly familiar with the splendid pioneer work done by Dr. Goldberger but those of us in the South who treat pellagra feel that in its causation there is operative some factor or factors other than deficient diet. We can assume, as did Dr. Goldberger, that, in a certain number of patients at least, pellagra is due to the failure of the diet to provide some important factor. It is not possible, however, that in other cases, accompanying the achlorhydria, there is some underlying defect in the digestive apparatus, which defect, as was pointed out by Castle, prevents the patient from securing from his food some necessary substance, and that the lack of this substance produces pellagra?

DR. FRANK SMITHIES, Chicago: The diet that is supposed to cause pellagra is not an acid secretion-stimulating diet. In the instances of pellagra that I have seen it seemed that, in general, the cases that showed a persistent deficiency of gastric acid secretion ran in close parallel to their exhibiting definite central or cord damage. Dr. Mulholland's figures, which are similar to mine, indicate that, in the group of cord cases, histamine apparently had little if any effect toward producing gastric acid secretion. In Bakin's studies, in which histamine-like effects were brought about in the secretion of acid gastric juice, pepsin frequently was as low as one twentieth of the normal quantity. On the other hand, when gastric secretion follows stimulation by the "end-products" of protein digestion themselves, a gastric secretion low in hydrochloric acid but high in its quantity of pepsin is secured. It is apparent that in pellagra as well as in other forms of "deficiency" diseases associated with low hydrochloric acid secretion and anemia, one must pay more attention than heretofore to the quantitative estimation of hydrochloric acid and of pepsin in gastric secretion. In all probability such quantitative variations explain why pellagra patients may be put on a full diet of mixed foods and do well, digestively, provided they do not exhibit extensive damage of the central nervous system. In the presence of large volumes of pepsin, apparently very low ratios of hydrochloric acid admit of good digestive function. I long ago abandoned the Ewald meal and its variants and the alcohol test. Such "meals" are not real foods and cannot excite the real food responses. In fact, the Ewald meal is the type of meal on which the pellagra patient has lived during the period in which he acquired pellagra; namely, a carbohydrate nonacid-stimulating meal. Such a meal remains in the stomach a short time and has little value as an acid excitant. If one gives a pellagrin a full meal of mixed foods, and fractionally, every quarter of an hour, over a full digestive phase of four hours, removes specimens for analysis, one will be surprised to note that during the first two hours, while low or practically no hydrochloric acid secretion occurs, after that period acid secretion is abundant and patients who on Ewald or alcohol meals had, at an hour's time interval, been classed as instances of achlorhydria, exhibit satisfactory or even normal hydrochloric acid secretion and good peptic values.

DR. A. L. LEVIN, New Orleans: In the last seven years I have made a special study and observations proving that there is a definite relationship between liver and the hydrochloric acid production in the stomach; in other words, that the liver holds the control key to the production of hydrochloric acid. My studies included cases of chronic cholecystitis, biliary cirrhosis, polyarticular rheumatism, pellagra, sprue and pernicious

anemia; in fact, my observations were made on any disease associated with achlorhydria. When these patients are treated with liver extract, as in pernicious anemia, the hydrochloric acid quite often returns to normal. It is known that liver substance influences the hematopoietic system. It has also been proved that stomach tissue or gastric secretion has an influence on the hematopoietic system. My clinical observations lead me to believe that liver substance influences the production of hydrochloric acid. Thus there is a triangle—liver, stomach and hematopoietic system. Under normal conditions, the relationship between the three systems is perfect. Certain diseases, among them pellagra, often disturb that relationship and the result is lack of hydrochloric acid and a disturbance in the formation of blood. Where this disturbance originates and which is affected first is not known as yet. I wish to call the attention of physiologists in order to initiate a careful study of this relationship. I would advise Dr. Mulholland to treat his pellagra cases with liver extract and observe its influence on the hydrochloric acid. The liver treatment must be carried on sometimes for several months before either satisfactory results are obtained or failure indicates atrophy of the peptic glands.

DR. H. B. MULHOLLAND, University, Va.: I regret that I have only twenty-one cases in which gastric analyses have been repeated. It is very difficult to get these people to come back, as the majority of them live in the mountains. Unless one has money enough to hire a nurse for a month to bring them in a car, it is almost impossible to make follow-up examinations. However, I intend to continue this study with special reference to this feature and endeavor to determine the permanence of anacidity. In the hospital recently was one of the most severe cases that I have seen of involvement of the central and peripheral nervous system, presenting extensive skin lesions, stomatitis, diarrhea and mental symptoms. The patient had paresthesia, hyperactive reflexes, ankle clonus and a positive Babinski reflex. He had, nevertheless, about 68 degrees of free hydrochloric acid in the stomach on repeated gastric analyses. Patients may have marked changes in the nervous system and free hydrochloric acid in the stomach contents. These signs of nervous system involvement may disappear as the general condition picks up. I agree with Dr. Smithies in that I do not think the Ewald test meal or the alcohol test meal is a good stimulant for gastric secretion, and I am now using histamine alone. Dr. Levine referred to the use of liver in cases showing no acid. I would say that I now treat these cases with an aqueous extract of liver, but I have not used the whole liver substance. It is felt that aqueous extract of liver is much more efficacious than yeast, producing a more rapid clinical improvement; but this is only a clinical observation. In one or two such patients I have repeated the gastric analyses, and I am quite sure that at least one has shown a permanent lack of free hydrochloric acid.

The Hemolytic Anemias.—The most important group of hemolytic anemias is constituted by those of congenital or familial origin: acholuric family jaundice, sickle-cell anemia, the erythroblastic anemia of infants, and icterus gravis neonatorum. . . . Acholuric jaundice and sickle-cell anemia are dependent on the presence of an abnormal type of corpuscle, which is ill adapted to life in the blood stream, but the factors which determine the degree and the variations in hemolysis are obscure. The pathology of the erythroblastic anemia of infants is unknown. Icterus gravis neonatorum is a most interesting disease, which may shed light on the mechanism of the acute anemic breakdowns of later life and which therefore deserves rather longer mention. In this grave familial jaundice successive infants in a family become jaundiced a few hours to a day after birth. They become progressively anemic, pass into a drowsy condition, and usually die in a few days or weeks. The disease resembles physiological jaundice on its onset, and, like it, it does not show any gross postmortem appearances to account for the jaundice. During intra-uterine life the red cells circulate in higher concentration than after birth to compensate for the poor supply of oxygen from the placenta. It is probable that physiological jaundice results from the hemolysis of superfluous corpuscles on the adoption of pulmonary respiration, and that grave familial jaundice is a morbid exaggeration of this process.—Witts, L. J.: *The Pathology and Treatment of Anemia*. *Lancet* 1:601 (March 19) 1932.

THE CLINICAL MANIFESTATIONS OF SILICOSIS

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Comments on the clinical manifestations of silicosis as reported in this paper are based on a study¹ carried out among 7,722 men employed as miners in the Picher District of Oklahoma. This work was done during the year 1928 by officers of the United States Bureau of Mines and the United States Public Health Service, in cooperation with the Metropolitan Life Insurance Company and the mine operators' association. In commenting on the similarity of these observations to those noted by Dr. Irvine and his associates in their study of the silicosis problem in South Africa, it will be recalled that Irvine² summarized, in his report to the international conference held in Johannesburg in 1930, the results of the important work done by that group of investigators.

The disease has been divided, both in South Africa and in the United States, into two classes: simple silicosis and silicosis plus tuberculosis, or tuberculosis with silicosis. Simple silicosis is further divided (for convenience of description and possible compensation purposes) into three stages: first, second and third stage silicosis. In South Africa and in Ontario they are defined by law as anteprimary, primary and secondary.

If by clinical manifestations is meant those factors that can be ascertained from the individual having the disease, one may include the personal data, the past history of diseases, occupation, present history, physical examination and roentgen and laboratory observations. In this symposium at least a portion of these, notably the roentgen observations, will be discussed in other papers.

The Committee on Pneumoconiosis of the Industrial Hygiene Section of the American Public Health Association has given the following statement in regard to the stages of this disease:

First Stage (corresponds to anteprimary stage of South Africa).—The symptoms of uncomplicated first-stage silicosis are few and often indefinite. The man may apparently be quite well and his working capacity not noticeably impaired. Slight shortness of breath on exertion and some unproductive cough, often with recurrent colds, are the most usual symptoms. The man may have a little less ability to expand his chest than formerly and the elasticity of the chest may be slightly impaired. The earliest specific indication of the presence of silicosis is the radiographic appearance, consisting of generalized arborization throughout both lung fields with more or less small, discrete mottling.

This characteristic mottling is due to shadows cast by the discrete individual nodules of fibrous tissue in the lungs and is essential to the diagnosis of silicosis; without this finding the diagnosis of silicosis is not sustained except by autopsy.

A report³ on silicosis made in 1925 contains a statement that no nationality is exempt and that all races are susceptible, and that age in itself is probably no great factor in the prevalence of this disease.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. Sayers, R. R.; Meriwether, F. V.; Lanza, A. J., and Adams, W. W.: *Silicosis and Tuberculosis Among Miners of the Tri-State District of Oklahoma, Kansas and Missouri*: I, technical paper 545, U. S. Bureau of Mines.

2. Irvine, L. J.: *Report upon the Work of the Miners' Phthisis Medical Bureau for the Year Ended July 31, 1928*, Pretoria, Union of South Africa, Government Printing and Stationery Office, 1929, p. 51.

3. Sayers, R. R.: *Silicosis Among Miners*, technical paper 372, Bureau of Mines.

In the report for 1928, Irvine is quoted as saying that "0.83 per cent had silicosis at 30 to 35 years of age, 2.61 per cent at 34 to 37 years, 3.34 per cent at 38 to 41 years, 3.77 per cent at 42 to 45 years, and 3.51 per cent at over 46 years." The work in the Picher District indicated that 10.3 per cent of the miners between 20 and 29 years of age had silicosis, 32.2 per cent between 30 and 39 years, and 37.8 per cent between 40 and 49 years. Tabulation of the ages from 35 to 45 showed that the rise in the 30 to 39 group occurred largely between 35 and 40 years. This was thought to be due to the length of service underground by this group of men. Tabulation of the men entering the mines under 20 years of age shows that 20.3 per cent ultimately developed silicosis; of those entering from 20 to 29 years of age, 20.8 per cent developed silicosis; from 30 to 39, 24.1 per cent developed silicosis; and from 40 to 49, 24.7 per cent developed silicosis. All men with first-stage silicosis worked an average of 13.0 years, but those starting in the mines after 40 worked an average of only 7.8 years.

In the history of past illness in the study of 7,722 men examined at the Picher Clinic, it was found that there was no correlation between silicosis and past diseases, although diphtheria, scarlet fever and malaria were reported more frequently by those having silicosis. Tonsillitis, especially if the attacks were recurrent, seemed to be associated with tuberculosis but apparently had no relation to silicosis. According to Irvine, it is the belief of the investigators in South Africa that "it remains true to say that we should not think of 'simple' silicosis merely as a dust fibrosis, but as being, at least in many cases, a dust fibrosis which, from its beginning as a clinically detectable condition, is linked up with an element of latent tuberculous infection."

It was noted that shortness of breath was generally recognized as a cardinal symptom of silicosis. Of the 7,722 men examined at Picher, the following incidence of admitted shortness of breath was found: among men essentially negative for silicosis, 10.2; among those with first-stage silicosis, 18.4.

Irvine states that there is some amount of irritating cough, typically a dry cough with little or no expectoration, often worst in the morning and sometimes inducing vomiting. In the group at the Picher Clinic, a cough was frequently admitted among silicotic patients, and was generally nonproductive. In the essentially negative also, however, the symptom was admitted in 13.9 per cent of the cases. In first-stage silicosis the percentage was 18.2.

Expectoration, hemoptysis and night sweats were slightly increased in the first stage of silicosis but probably were indicative of infection. The hemoptysis admitted was probably due, at least in part, to the method of asking the question: "Do you cough up blood?" In some cases this was due to nasal catarrh.

Loss of strength was admitted in 3.5 per cent of the negative individuals and 6.4 of the first stage. Loss of appetite was admitted in 1.9 per cent of the essentially negative and 3.3 per cent of the first stage. Other pronounced symptoms in advanced cases of silicosis are constipation, epigastric discomfort and other vague complaints, which the men termed "indigestion." The causes of the gastro-intestinal symptoms were not ascertained.

In the group of men under discussion, those having first stage silicosis usually appeared to be in robust health. The chest musculature, in particular, stands well out and the shoulders are held well back. There

are usually no marked symptoms of ill health, such as paleness or loss of subcutaneous fat. The average weight of the essentially negative individual was 143 pounds (65 Kg.), and of those in the first stage of silicosis, 147 pounds (66.7 Kg.). The observations on the blood pressure of the men showed that it tended to remain normal or increase somewhat in silicotic patients. Any persistent, marked drop in the blood pressure of silicotic patients probably indicates a tuberculous infection.

Irvine² states that:

The conformation of the chest usually shows little or no alteration, although the upper chest may show some flattening. The percussion note is typically of average normal quality. The practically constant clinical signs are:

1. A certain lack of elasticity of the chest wall during the movements of respiration, together with
2. A somewhat reduced air entry, and
3. A characteristic alteration of the inspiratory murmur from the normal "vesicular" character to a higher pitched or "harshened," "thinned" and commonly somewhat shortened type, the expiratory murmur, although somewhat prolonged, remaining fainter than the inspiratory.

This type of breath sound is very characteristic, with some modifications, of silicosis in all its stages, and this clinical sign has also the significant character of more or less complete generalization. It is first noticeable at the anterior, lateral and basal regions.

In a minority of cases, however, the breath sounds may be simply diminished, but breath sounds which are simply diminished or which, on the other hand, are merely somewhat louder or more "pronounced" than normal are not specially characteristic of silicosis.

Usually there are no accompaniments, but a stray rhonchus may be heard here and there.

This complex of physical signs is almost constantly present in cases of a slight degree of "simple" silicosis. The cough may be put down to the coincident bronchitis and bronchiolitis, the recurrent pains to slight intercurrent local pleuritis.

In the group under discussion, the changes in physical signs in the chest conformed generally to Irvine's statement, in that they are not definite in most cases of first stage silicosis. Retractions in the early stages showed some rise over those of the essentially negative—from 6.3 to 8.9 per cent. The retractions were located in the lower sternal, suprasternal, supraclavicular and infraclavicular regions. The percentage of any one type of retraction is very small and was not of value as a diagnostic sign. It is generally accepted that a cardinal physical finding in silicosis is diminished chest expansion. Emphasis should not be put on the chest expansion found but rather on the importance of the comparison with the man's chest expansion found in early examinations. The average chest expansion for the essentially negative was 3.2 inches; in the first stage of silicosis it was 3.0 inches.

The observations mentioned by Irvine regarding the limited extent of chest movements were present in the Picher group. The chest seemed to fail to return to the normal expiratory position. The elasticity of the normal chest seemed to be diminished.

On auscultation there is an increase in the number of men having harshened breath sounds in the first stages of silicosis. Râles, when heard, were more frequently in first stage silicosis and usually at the bases of the lungs.

Second Stage.—In the second stage of silicosis, which corresponds to the primary stage of South Africa, a definite shortness of breath on exertion is usually found, and pains in the chest are a frequent complaint. A dry morning cough is often present, sometimes with

vomiting, and recurrent colds are more frequent. Even then the man's appearance may be healthy but he is dyspneic on exertion, he cannot work as well as formerly and his chest expansion is noticeably decreased, the movement being sluggish and diminished in elasticity.

The characteristic roentgenographic appearance is a generalized medium-sized mottling throughout both lung fields. The shadows of the individual nodules are for the most part discrete and well defined on a background of fibrous arborization, but there may be here and there larger but limited opacities due to irregular pleural thickening or to a localized aggregation of nodules.

Irvine states that in a definitely established degree of simple silicosis the radiographic and clinical signs are very distinctive. Among the men in the present study, shortness of breath was found in 30 per cent of those with second stage silicosis, as compared with 10 per cent in the essentially negative. Cough was present in 23 per cent, as compared with 14 per cent in the essentially negative. Expectoration was admitted three times as frequently in this stage as among the negative and hemoptysis more than five times, night sweats more than four times, and loss of weight more than three times. Gastro-intestinal symptoms were about three times as frequent in this group as in the

in the first group, each individual's measurements would have to be considered in reference to the measurements found on his previous examination. The inspiratory breath sounds, as found by Irvine, were shorter than normal and the expiratory sounds prolonged, becoming much diminished in the second stage as compared with the negative.

Third Stage (corresponds to the secondary stage of South Africa).—In the third stage the shortness of breath is marked and distressing even on slight exertion. The cough is more frequent; the expectoration is in most cases slight but may be copious. The individual's capacity for work becomes seriously and permanently impaired; his expansion is greatly decreased even with forced inspiration; he may lose flesh; his pulse rate may be increased and his heart may become dilated.

The radiographic appearances in the third stage are further accentuated, the mottling is more intense and the nodules are larger and take on a conglomerate form, so that large shadows are shown corresponding to areas of dense fibrosis.

Irvine states that the workers in South Africa found advanced cases of third stage silicosis only among men of robust physique. He further states that few cases of advanced silicosis are without the infective element, although this may be latent and not apparent clinically. He noted that the general nutrition may be quite good and that many of the men are obese. With few exceptions there is some cyanosis and some obvious dyspnea. The chest is smoothly flattened without showing marked retraction. The intercostal and infraclavicular spaces may show no obvious hollowing. The chest has the appearance of moderate emphysema, and a greater or less degree of emphysema is a constant feature. The expansion is decidedly impaired; the percussion note is flat, although there may be local areas of dullness due to thickened pleura. The inspiration is very short and decidedly reduced; the expiration is high pitched, sometimes thin and rather blowy, but may be merely reduced. Formerly, secondary cardiac dilatation, with cyanosis and dropsy, eventually resulting in death, were seen. Irvine states that such cases are uncommon in South Africa at this time.

Only thirty-two third stage silicotic individuals were found in the series of examinations on which this paper is based. While this number is not sufficient to establish the symptom complex, the clinical observations and symptoms do confirm those found by Dr. Irvine.

Silicosis with tuberculosis, or silicosis plus tuberculosis, is stated by the South African workers to mean silicosis complicated by clinically obvious, active or overt tuberculosis; in other words, that there must be constitutional signs of active tuberculous infection, not merely physical signs of limited areas of consolidation or indications of the roentgenogram. However, the roentgenographic observations are important in the diagnosis of silicosis with tuberculosis.

Dr. Irvine calls attention to the fact that the supravention of active tuberculosis is usually very clearly indicated by a definite and progressive loss of weight, increased cough and expectoration, sometimes with hemoptysis, and rapid breakdown of the patient's condition. Dyspnea appears to be quite out of proportion to the actual extent of infection. However, in some cases in which the infective element is less acute, the disease may be, of course, very chronic, with a tendency to retardation and limitation of infection.

Subjective Symptoms of Silicosis

Degree of Silicosis	Dyspnea	Cough	Expecto- ration	Hemo- p- t- y- s- is	Night Sweats	Loss of Strength	Loss of Appetite
Essentially negative	10.2	13.0	0.9	1.0	0.9	3.5	1.9
First stage silicosis	18.4	18.2	1.0	2.0	1.3	6.4	3.3
Second stage silicosis	30.8	23.3	3.2	5.5	4.3	11.8	5.9
Third stage silicosis	43.7	34.4	3.1	0.0	3.1	25.0	6.2
Silicosis with tuberculosis	44.2	42.0	3.7	11.2	6.0	24.0	12.4
Uncomplicated tuberculosis ..	....*	44.2	7.7	17.5	9.6	29.8	14.4

* Not stated.

essentially negative. In other words, all these symptoms increased materially in this stage of silicosis over the essentially negative or over the previous stage.

The South African workers have stated⁴ that the clinical examination in simple silicosis in this stage shows a corresponding advance on the conditions found of the early stage. The man is of robust type, well nourished and not infrequently above normal weight. The upper part of the chest is typically "smoothly" flattened or "sloping" but not markedly retracted as in chronic tuberculosis. The character of the chest movement is modified in quality, sluggish and lacking in elasticity; and there may be some reduction in the range of movement. The percussion note is somewhat flattened without being definitely dull, especially posteriorly. Breath sounds have more definite, characteristic thinning and harshening of inspiration, the expiration being longer and fainter. The cough is dry and irritating in character. There is definite impairment of working capacity.

Among the group under observation in the work at Picher, the men in general appeared to be in better health than those of the essentially negative group, the average weight of those having second stage silicosis being a little more than 149 pounds (67.6 Kg.), or an increase of about 5 pounds (2.3 Kg.) over the average of the negative group. There was a slight decrease in chest expansion; but, as stated in regard to the cases

4. Silicosis, Studies and Reports, Series F, No. 13, Geneva, International Labor Office, 1930, pp. 283-284.

Two hundred and sixty-seven cases of silicosis plus tuberculosis were found among the 7,722 men examined in the Picher group; and again the observations in these cases were similar to those described by Dr. Irvine.

It should be emphasized that, while the cardinal symptom of silicosis is shortness of breath, the cardinal sign decreased chest expansion and the earliest specific indication, the characteristic roentgenographic appearance, the diagnosis should be made only by a correlation of all the facts: symptoms, signs, occupational history, and laboratory and roentgen observations.

ETIOLOGY OF SILICOSIS

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The Committee on Pneumoconiosis and the Committee on Standards of the American Public Health Association, at a joint meeting in November, 1932, adopted the following definition of silicosis:

Silicosis is a disease due to breathing air containing silica (SiO_2) characterized anatomically by generalized fibrotic changes and the development of miliary nodulation in both lungs, and clinically by shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, increased susceptibility to tuberculosis (some or all of which symptoms may be present) and by characteristic x-ray findings. The disease is divided arbitrarily into first, second and third stages for convenience of description and possible compensation purposes.

I wish to make clear that in this discussion we are concerned with true silicosis and not with other forms of pneumoconiosis due to the inhalation of dusts containing combined silica in the form of silicates or of organic dusts. Numerous dusts will produce a pneumoconiosis demonstrable by x-rays; but just as these other dust diseases of the lung differ in their exciting cause, so do they differ in the pathologic changes that characterize them. Silicosis is an important disease because it is widespread in industry, and, because, as a result of the peculiar susceptibility to tuberculosis which it induces, it is attended by a high rate of mortality.

DUST

The primary cause of silicosis, then, is free silica, inhaled in the form of dust. Extensive research and experimentation have clearly demonstrated that this dust, in order to achieve its harmful effects on the lung tissue, must be in a fine state of subdivision; that the dust particles must, in fact, be less than 10 microns in their greatest diameter. Most of the dust penetrating the alveoli is less than 5 microns in diameter.¹ It is, therefore, a dust invisible to the unaided eye, and its estimation, in any specific instance, depends on a definite technic of dust sampling and counting. In this country that technic has been defined and standardized by the United States Public Health Service.² Dust concentrations are measured in terms of million particles per cubic foot.

Silicosis is a disease that develops slowly—very slowly as a rule, most frequently over a period as long as ten years. It may develop in two years, perhaps even less. The rate of development is dependent largely on the dosage of silica, and this in turn is determined by three variables—the amount of dust in the inspired air, the amount of silica in the dust, and the extent of exposure. Obviously, exposure to a concentration of forty million particles per cubic foot, containing 90 per cent silica, for eight hours a day, day in and day out, will produce silicosis much more rapidly than the same degree of exposure for two days a week or daily exposure to ten million particles containing 40 per cent silica. Actually, as these factors may and do vary in different localities, so do they mold the clinical picture. This accounts for the occasional dogmatic and varying statements made by observers familiar only with the conditions prevalent in their own vicinity. It has been claimed by some observers that certain substances, which may be present in silica-containing dust but not in combination with the silica, may advance or retard the development of silicosis. The presence of clay and other inorganic substances has been stated to prevent the development of silicosis,³ while in other instances certain alkalis are credited with greatly speeding up silicosis, so that it may develop into a full blown case with fatal termination in the space of months rather than years.⁴ Further study is needed to evaluate these observations.

INFECTION

The distinguishing characteristic of silicosis is the extraordinary susceptibility to tuberculosis which it induces in its victims. Years ago, Dr. Summons⁵ of Bendigo, Australia, stated that the gold miners there who contracted silicosis died of tuberculosis and that observation has been confirmed in every part of the world where silicosis is prevalent. In my own experience I can recall but one patient who died from his pulmonary fibrosis. When a tuberculous infection is implanted on a silicotic lung, it intensifies and accelerates the formation of fibrotic tissue, and the pathologic vicious circle thus set up may continue for some time before the infection becomes clinically manifest. In other words, tuberculosis is more than a terminal infection in silicosis.

Studies made at the Picher Clinic by the United States Bureau of Mines and the Saranac Laboratory have shown that infection also occurs in silicotic lungs, as a result of a rather complex symbiotic union of the ordinary anaerobic bacteria of the upper respiratory tract, principally fusiform bacilli and Vincent's spirochetes. Research into this phase of silicosis is now being carried on at the experimental laboratories of the Bureau of Mines in Pittsburgh and at the Saranac Laboratory. Thus, the principal etiologic factor in silicosis is silica in the form of dust, with the added factor, in a great majority of all but early cases, of tubercle infection, with the rôle of other infections not as yet clearly established.

3. Heffernan, Patrick: Exposure to Silica Dust Without the Occurrence of Silicosis, *J. Indust. Hyg.* 8: 481 (Nov.) 1926.

4. Chapman, E. M.: Acute Silicosis, *J. A. M. A.* 98: 1439 (April 23) 1932. Kessler, W. H.: Silicosis in the Abrasive Powder Industry, *J. Am. Pub. Health A.*, December, 1931, p. 1391. Kilgore, E. S.: Pneumoconiosis: An Unusually Acute Form, *J. A. M. A.* 99: 1414 (Oct. 22) 1932; discussion, July 9, p. 166. Silicosis: Acute Cases Caused by Cleaning Powder, *Bull.* 541, U. S. Bureau of Labor Statistics, p. 353.

5. Summons, W. E.: Report of Miners' Phthisis submitted to Committee of the Bendigo Hospital, Bendigo, Victoria, 1907; quoted in Silicosis, Records of the International Conference at Johannesburg, August, 1930; International Labour Office, Studies and Reports, Series F, No. 13, Geneva, 1930, p. 303.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. McCrae, John: The Ash of Silicotic Lungs, *Pub.* 3, South African Institute for Medical Research, 1913; General Report of the Miners' Phthisis Prevention Com. S. A. 1916, appendix 7, pp. 131-134.

2. Katz, S. H.; Smith, G. W.; Myers, W. M.; Trostel, L. J.; Ingels, M., and Greenburg, L.: Comparative Tests of Instruments for Determining Atmospheric Dusts, U. S. Pub. Health Bull. 144, January, 1925.

CONTRIBUTING CAUSES

I do not believe that individual susceptibility plays an appreciable part in the etiology of silicosis in normal individuals. Pre-existent pulmonary diseases, especially tuberculosis and pneumoconioses, other than silicotic, tend to hasten and aggravate the development of silicosis. I have observed that coal miners who presumably had anthracosis and who then went to work in hard rock metal mines succumbed to silicosis much more rapidly than their fellow workers. The published reports of the Picher Clinic bear this out.⁶ Age undoubtedly has an influence on the development of silicosis. The Picher studies show, for 8,000 men examined, that whereas all the patients with first stage silicosis had worked an average of thirteen years, those who had started mining after the age of 40 had worked an average of only 7.83 years. Nasal obstruction or other conditions causing mouth breathing are naturally credited with increasing the incidence of silicosis. The Picher reports do not show much definite relationship between the incidence of silicosis and previous diseases, but this was possibly in part due to the difficulty in securing accurate histories. Syphilis, however, definitely enters into the picture. All the evidence tended to show that men with a 4 plus Wassermann reaction developed silicosis more quickly than the Wassermann negative group, and their disease ran a more rapid course.

The influence of race on the incidence of silicosis is probably of minor importance, except perhaps as it may involve resistance to tuberculosis. There is some recent evidence which tends to show that American Negroes contract silicosis in a shorter time with a quicker fatal termination than do white men; but this may be but a reflection of a higher tuberculosis ratio, a higher syphilis ratio, or both.⁷

No correlation could be established in the Picher studies,⁶ at least, between good or bad living conditions and the incidence of silicosis. Occupation, so far as it involves exposure to siliceous dust, is of the utmost importance. Silicosis exists only as an occupational disease and has been identified with metal mining for centuries. The introduction of pneumatic tools for drilling, cutting or chipping siliceous rock has occasioned a world wide distribution of silicosis, especially in mines, quarries, tunnel construction and stonework of various kinds. Sandblasting involves a most serious hazard and foundries and potteries contribute their quota of cases, as do processes involving grinding and vitreous enameling; the use of artificial grinding wheels has greatly diminished the hazard formerly associated with the use of natural stone wheels. Many other industrial processes, too numerous to list, involve exposure to siliceous dust.

Silicosis is a widely spread occupational disease and its peculiar relationship to tuberculosis, the difficulties of diagnosis, and the extreme difficulty associated with efforts for prevention and control, all combine to make it a disease of major importance. For this reason, I desire to emphasize most strongly the necessity for the precise recording of the patient's occupation, both by

physicians and hospitals, especially in cases which present pulmonary symptoms. Not merely the patient's present but also his previous occupations should be ascertained.

Recent investigations and studies have revealed various types of pneumoconiosis which tend to confuse further both diagnosis and prognosis. This makes imperative an accurate marshaling of all the etiologic factors in the consideration of any case in which the inhalation of silica dust is concerned.

SILICON DIOXIDE CONTENT OF LUNGS
IN HEALTH AND DISEASE

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Henke and Lubarsch¹ found reference to dust as a cause for disease of the lung as early as 1556. Ursinius in 1652 reported two forms of mountain sickness caused by the inhalation of dust. The study of the presence of carbonaceous material within the lungs and its association with pulmonary disease progressed slowly but steadily from that time to the present. The names of Ramazzini² (1717), Bubbe (1721), Leblanc (1795) and Johnstone (1799) are closely allied to the early history and development of pneumoconiosis. Pearson,³ in 1813, applied the term anthracosis to lungs containing carbon particles. The greatest advances in the diagnosis, treatment and prevention of silicosis have been made in the last thirty years. The first report with a microscopic demonstration of silica was made by Peacock⁴ in 1860. In his article, wood cuts were used to demonstrate the presence of carbon and silica in teased sections of the lung. Greenhow⁵ examined a specimen of lung from a razor grinder who had died from an intercurrent attack of acute pneumonia. He found crystalline and small angular bodies which, when submitted to hydrofluoric acid, were entirely dissipated. This is the first recorded chemical proof of the presence of silicon dioxide in the human lung. The first reference to silicosis was made by Rovida.⁶

Schmidt⁷ reported sand in the lungs of all persons except the new-born. His figures, from 4.2 per cent to 17.3 per cent of silicon dioxide in the ash, were high for normal lungs. Eternod⁸ found sand microscopically in the residue of lungs after treating with hydrochloric acid. Meinel⁹ made a quantitative examination of the peribronchial lymph glands and lungs. Arldige¹⁰ quotes an analysis by Church of a potter's lung, the ash of which contained 47.78 per cent of silica. Ordtmann¹¹ reported the lungs of a 14 day old child to have 2.88 per cent of ash in the dry material. Orth¹² stated that normal lungs and peribronchial lymph glands do not show sand microscopically, while carbon and other

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6. Sayers, R. R.; Meriwether, F. V.; Lanza, A. J., and Adams, W. W.: Silicosis and Tuberculosis Among Miners of the Tri-State District of Oklahoma, Kansas and Missouri: I, for the Year ended June 30, 1928, Technical Paper 543, U. S. Bureau of Mines, Washington, D. C., Department of Commerce, 1933. Meriwether, F. V.; Sayers, R. R., and Lanza, A. J.: II, for the Year ended June 30, 1929, Technical Paper 552, U. S. Bureau of Mines, Washington, D. C., Department of Commerce, 1933.

7. Everett, F. R.: The Pathological Anatomy of Pulmonary Tuberculosis in the American Negro and in the White Race, Am. Rev. Tuberc. 27: 411 (May) 1933.

1. Henke, Friedrich, and Lubarsch, Otto: Handbuch der speziellen pathologischen Anatomie und Histologie, Berlin, Julius Springer, 1930.

2. Ramazzini, Bernardino: De morbus arteficiali diatriba, 1717.

3. Pearson: Phil. Tr. London 11: 120, 1813.

4. Peacock: British and Foreign M. Rev. 11: 263 (Jan.) 1860.

5. Greenhow: Tr. Path. Soc. London 16: 59, 1865.

6. Rovida: Un caso di silicosis del polmoni con analisi chimica, 1871.

7. Schmidt: Deutsches Arch. f. Klin. Med. 11: 89, 1866.

8. Eternod: Recherches sur les affections chroniques des ganglions

9. Meinel: et les suites de ces affections, Genève, 1879.

10. Arldige: Krankung der Lungen durch Kieselstaub-

11. Inaug. Diss., 1869.

12. Orth: res, Lancet 1: 615, 1889.

up-Besanez Lehrbuch, ed. 4, p. 732.

12. Orth: Lehrbuch der speziellen pathologischen Anatomie, Berlin

1: 81, 1887.

dusts may appear. Schottelius¹³ found that it required eight days for the sand to appear in the peribronchial lymph glands after entering the lungs, while other authorities reported a shorter time. Schlodtmann¹⁴ examined the lungs of thirty-five patients, finding sand in all except in two babies, one 11 days old and the other 5 months old, reporting traces, moderate amount and rich in silica. He quotes Kussmaul¹⁵ as saying thirty years before that the border line age for the presence of silica in infants was three quarters of a year. This statement is quoted by many authors and is in error, as will be noted in another paper which is now in preparation. Arnold¹⁶ found that the peribronchial lymph glands contained more metal than the lungs. Woskressensky¹⁷ found silica in all the fifty-four lungs examined except two from infants. The lungs of individuals whose occupations do not expose them especially to dust inhalations contain an increasing amount of silica in direct proportion to the age. A similar observation was made by Kall¹⁸ in the examination of the hair. In the hair of new-born babies he found 0.1 per cent of silicon dioxide, and in dark brown hair 0.23 per cent. In only seven instances were quantitative examinations made by Woskressensky. He found that from 3.5 to 33.7 per cent of the ash of the lungs was silicon dioxide, while in the peribronchial lymph glands this amount was much higher, ranging from 18.3 to 55.6 per cent of the ash. Thorel¹⁹ reported that the lungs of a worker in soapstone contained 3.25 per cent of ash, including 2.43 per cent of soapstone. Langguth²⁰ found in the lungs of an iron miner that 11.9 per cent of the dry weight was silicon dioxide. Hodenpyl²¹ reported the analysis of the dried and powdered lung of a man who had worked at the trade of a knife grinder for fifteen years. The ash contained about 36 per cent of silicon dioxide. The emery represented by the oxides of alumina and silicon made up more than half of the ash.

McCrae²² reported the analyses of the lungs of six gold mine workers in South Africa, finding from 9 to 21.7 Gm. of ash per lung, of which from 29 to 48 per cent was silica, while a normal lung contained 0.73 per cent. Hirsch²³ reported that from 0.04 to 0.72 per cent of the dry weight of the lungs of four Chicago residents was silica. Böhme²⁴ found that a normal lung contained 0.12 per cent of sand on the dried sample; the lungs of patients with silicosis contained from 0.35 to 8.77 per cent of silica, depending on what portion of the lung was used, nonindurated or indurated. King²⁵ reported 1.4 mg. of silicon dioxide per gram of dried normal human lung. In four other analyses he reported 29.6, 60, 63 and 123.55 mg., respectively, per gram of dried tissue. Chapman²⁶ reported that the left upper lung contained 12 mg. and the lower left lung 13.2 mg. in a case of acute silicosis. Nicol²⁷ in a monograph, gives the microscopic and

chemical examination of lungs.²⁸ The amount of silica found by him was less than that reported by Böhme.

Silica is a normal constituent of the connective tissue, skin, blood, bones, nails, urine, feces and saliva of man. Kall²⁹ found it in the pancreas and thought, because of the large amount of silicon dioxide, that the pancreas acted as a reservoir for silica in the same manner as the liver does for iron. Henneberg³⁰ found it in the blood of fowl and also in the feathers. Kraut³¹ found that the silicon dioxide content of the blood of normal persons varies between 1 per cent and 3 per cent of the sulphate ash but that each individual maintains his silicon dioxide value within narrow limits. The blood of tuberculous subjects contains somewhat more silicon dioxide than that of a normal person. Kraut also found that the inhalation of a spray containing silicic acid raised the silicon dioxide 1.65 per cent over the normal. Collis³² found that a soluble silica when introduced into the blood stream reacts with the liver and kidney, causing fibrosis.

TABLE 1.—Percentage of Moisture in the Lung, Percentage of Ash, and Hydrochloric Acid Insoluble of Ash

Case	Moisture, per Cent	Ash, per Cent	Weight of Lung, Gm.	Mg. of SiO ₂ per Gram of Dried Tissue
312.....	85.72	5.61	600.5	0.92
311.....	89.15	6.71	729.5	1.86
317.....	3.06*	4.51	....	1.22
329.....	86.28	5.61	306	1.06
324.....	89.55	7.19	785	0.90
323.....	77.15	4.66	652	0.85
325.....	83.04	6.22	518	1.10
333.....	83.34	5.35	893.2	3.28
332.....	88.42	5.67	402	2.21
39.....	73.06	3.75	619	1.65
41.....	85.31	....	388	1.40
35.....	84.21	6.58	602	1.50
42.....	80.15	5.32	561	4.60
34.....	89.98	5.14	707	0.92
350.....	86.20	7.51	708	2.40
352.....	82.57	3.82	1,048	0.73
349.....	86.05	8.13	468	7.06
207.....	81.69	5.24	543	0.79
359.....	81.18	5.20	307	1.41
356.....	87.18	5.27	416	1.25
357.....	89.37	5.08	304	2.66
360.....	81.82	2.46	126	0.13
358.....	85.64	5.26	312.5	1.51
368.....	84.49	5.97	321	2.37
361.....	81.79	5.68	756	9.75
337.....	89.43	6.61	310	0.61
389.....	90.06	5.15	780	0.71
431.....	86.03	6.17	378	1.21
441.....	....	4.76	....	1.80
455.....	....	4.10	....	0.40
459.....	....	....	....	....

* Moisture on dried sample.

The common opinion among the public and even among physicians is that silicon dioxide is an absolutely

13. Schottelius: Virchows Arch. 73:527, 1878.
14. Schlodtmann: Centralbl. f. allg. Path. u. Path. Anat. 6:649, 1895.
15. Kussmaul: Deutsches Arch. f. klin. Med. 2:89, 1867.
16. Arnold: Virchows Arch. f. path. Anat. 80:315, 1880.
17. Woskressensky: Centralbl. f. Path. 9:296, 1898.
18. Kall: Die Kieselsäure im tierischen und menschlichen Organismus, Würzburg Inaug. Diss., 1898.
19. Thorel: Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's) 20:85, 1896.
20. Langguth: Deutsches Arch. f. klin. Med. 55:255, 1895.
21. Hodenpyl: M. Rec. 56:942, 1899.
22. McCrae, John: The Ash of Silicotic Lungs, Pub. 3 South African Inst. M. Research, Johannesburg, March, 1913.
23. Hirsch, E. F.: A Method for Graphic Demonstration of the Foreign Inorganic Matter and Carbon in the Lungs, J. A. M. A. 66:950 (March 25) 1916.
24. Böhme, A.: Klin. Wchnschr. 3:1909 (Oct. 14) 1924.
25. King, E. J.: J. Biol. Chem. 80:25 (Nov.) 1928.
26. Chapman, E. M.: Acute Silicosis, J. A. M. A. 98:1439 (April 23) 1932.
27. Nicol: Die Staublunge der Flussparbeiter, 1933, Jena, G. Fischer.

28. For the microscopic and chemical methods for the identification of silica in lungs, other authors than those mentioned can be consulted: Moir: Report of a Specimen of Dust from a Silicotic Lung, Gen. Ref. Miner's Phthisis Prev. Comm., Johannesburg, 1916, No. 9, p. 138; South Africa Govt. Print. & Station Off., Pretoria, 1916.
- Watkins, ibid., 1916, No. 8, p. 135.
- Watkins and Moir, ibid., 1919, Nos. 6 and 7.
- Piazzini, R.: Il contenuto in silicio del polmone normale e tubercolotico, Riforma med. 47:369 (March 9) 1931.
- Shied: Beitr. z. path. Anat. u. z. allg. Path. 89:93, 1932.
- Müller: Centralbl. f. allg. Path. u. path. Anat. 50:386, 1931.
- Policard, A., and Dubrow, A., and Pillet, D.: Compt. rend. Acad. d. sc. 188:278 (Jan. 14) 1929.
- Policard, A., and Devans, J.: Compt. rend. Acad. d. sc. 190:979 (April 23) 1930.
- Giese: Quarzstaub, Schwielenlunge und Lungentuberkulose, Jena, Fischer, 1931.
- Giese: Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's) 90:555, 1932-1933.
- Gerlach: Staublunge des Bergmanns, Arch. f. Gewerbepath. u. Gewerbehyg. 2, No. 1; 3, No. 2.
- Gerlach and Schwierz: Die chemischen Emissionen, Spektralanalyse, Leipzig, Voss, 1930.
- Hackmann: Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's) 90:623, 1932-1933.
- Thiele and Saupe: Die Staublungerkrankung, Berlin, Julius Springer, 1927.
- Jotten: Gewerbestaub und Lungentuberkulose, Berlin, 1932.
29. Kall: Dissertation, Würzburg, 1898.
30. Henneberg, Annalen 61:255, 1847.
31. Kraut: Ztschr. f. physiol. Chem. 194:81, 1931.
32. Collis, E. L.: M. J. Australia 2:721 (Nov. 27) 1926.

insoluble substance and that it exists only as silicates and silicon dioxide. Next to oxygen, silicon is the most common element of the earth's crust. It is almost always combined with oxygen in the form of SiO_2 (silica) and silicates. Free silica represents 12.8 per cent of the earth's crust and in a combined form it is said to be present in the proportion of 42.5 per cent. It forms quartz, tridymite, clay and opals; mixed with

in the air we breathe and in the water we drink. Ocean water contains more silica than fresh water, containing, according to Thoulet,³³ 0.0149 per cent of silica. The physiologic action and the manner in which it is absorbed are not clear. Some authorities are quoted as saying that it is absorbed as silicates and others as a colloid. The amount varies in different parts of plants and in different organs of man. In the lung of man,

TABLE 2.—Age, Occupation, Clinical Diagnosis, Anatomic Diagnosis and Milligrams of Silicon Dioxide

Case	Age	Sex	Occupation	Clinical Diagnosis	Anatomic Diagnosis	SiO_2 Mg. per Gram of Dried Tissue
312	63	♀	Dressmaker	Cardiac decompensation	Hypertrophy of heart; mural thrombus in apex of left ventricle	0.92
311	81	♂	Not given	Bronchopneumonia	Severe sclerosis of coronary and ab. art.	1.86
317	50	♂	Not given	Epidemic meningitis	Epidemic meningitis	1.22
325	62	♀	Housework	Suprarenal malignant metastasis to lung	Carcinoma of colon	1.66
324	73	♂	Not given	Mechanical obstruction of intestine	Fibrinopurulent peritonitis	0.90
323	63	♂	Not given	Bronchopneumonia	Eccentric hypertrophy of the heart with beginning brown atrophy	0.85
333	47	♂	Plasterer's helper	Pneumonia; tuberculosis	Moderate eccentric hypertrophy	1.10
332	38	♀	Housework	Carcinoma of cervix	Ulcerated dermoid cyst of cervix uteri	3.28
39	53	♂	Painter on automobiles	Cardiovascular renal disease	Eccentric hypertrophy of heart; marked dilatation; mural thrombi in the wall of L. V.	2.21
41	58	♂	Not given	Generalized arteriosclerosis	Eccentric hypertrophy of heart; dilatation of L. V.; early aneurysm formation in lateral wall	
35	65	♀	Not given	Cardiovascular renal disease; auricular fibrillation; decompensation	Eccentric hypertrophy of heart	
42	81	♂	Machinist	Chronic myocarditis; hyper., emphysema and fibroid tuberculosis	Subacute peptic ulcers of pyloric portion of stomach with erosion of artery and hemorrhage	1.5
34	59	♂	Not given	Malignant condition suspected; diagnosis uncertain	Solid round cell carcinoma of common bile duct	4.6
350	64	♂	Donkey driver and sailor	Carcinoma of head of pancreas with metastasis to the liver	Adenocarcinoma of common bile duct ..	0.62
352	50	♂	Unemployed	Prostatic retention; ascending pyelitis; pyelonephritis	Pseudomembranous hemorrhagic cystitis; bilateral pyelonephritis with multiple renal abscesses	2.4
349	52	♂	Worked in coal tar factory	Tuberculosis; carcinoma of lung; aneurysm of descending aorta	Saccular aneurysm of descending thoracic and abdominal portions of aorta, with compensatory atelectasis of left lower pulmonary lobe	0.73
267	65	♂	Farm worker; steel mill	In view of peripheral arteriosclerosis, the only diagnosis made was generalized arterial coronary sclerosis and cardiac failure	Eccentric hypertrophy of heart, especially of right ventricle	7.66
359	73	♂	Machinist	Infected diabetic gangrene of right foot	Diabetes mellitus	0.79
357	46	♀	Not given	Retroversion; bilateral salpingitis; organic heart disease, probably mitral	Diffuse recent hypertrophy of heart	1.23
356	61	♀	Not given	Cardiac hyper.; broken compensation	Eccentric hypertrophy of heart	1.41
360	41	♀	Housework	Infected draining abscessed wound; secondary breast abscess	Chronic localized fibrosis; pelvic peritonitis	2.66
358	2	♀	.....	Tracheobronchitis; acute edema; bilateral otitis media	Confluent bronchopneumonia in right upper and lower pulmonary lobes	0.13
368	13	♂	Pupil	High intestinal obstruction	Gangrenous suppurative appendicitis; large fecalith obstructing proximal portion	1.51
361	47	♂	Building worker	Hypertensive heart disease; decompensation	Eccentric hypertrophy of heart	2.37
337	28	♂	Shoveling coke in coal yard	Bilateral, far advanced tuberculosis, with serofibrinous pleurisy	Acinose nodose tuberculosis, combined with silicosis of lung	9.75
389	31	♂	Laborer	Syphilitic aortitis; myocardial failure; ascites and edema	Spontaneous rupture of ascending aorta	0.64
421	85	♂	Not given	Rheumatic heart; hyper.; dilatation of heart; myocardial fibrosis and failure; coronary sclerosis-thrombosis?; decomp. of lungs, liver, intestines, etc.	Chronic tuberculosis in right upper and both left pulmonary lobes	0.71
441	40	♂	Laborer	Pellagra; malnutrition; chronic fibroid apical tuberculosis	Lobar pneumonia in central portions in left lower pulmonary lobe	1.21
455	38	♂	Laborer	Shock and hemorrhage following beating	.....	1.80
459	23	♀	Waitress	Extensive hemorrhage following skull fracture; fractured ribs and punctured left lung	.....	0.40

various metallic oxides it forms flints, sandstone, agate, amethyst and cornaline.

Silicon is a tetravalent metalloid with an atomic weight of 28 and belongs to the carbon family, which it resembles in its physical and chemical properties. For instance, there is carbon dioxide CO_2 , and silicon dioxide SiO_2 . It forms liquid compounds, such as tetraethyl silicon, similar to carbon tetra-ethyl $\text{C}(\text{C}_2\text{H}_5)_4$. It differs from carbon in that it is very stable and at ordinary temperature is attacked only by hydrofluoric acid. Silica is a common constituent of all our food whether of animal or of vegetable origin. It is found

not exposed to a dusty atmosphere, some of this silica is endogenous in source and the remainder is derived from the air inhaled.

In order to arrive at an average of the silicon dioxide content of lungs, material was requested from various pathologists. Through the kindness of Dr. R. H. Jaffe of the Cook County Hospital, Dr. Henry Sweany of the Municipal Tuberculosis Sanitarium of Chicago and Dr. LeRoy U. Gardner of Saranac Laboratory, Saranac, N. Y., material was received from people dying of various diseases. The fresh material as received was

33. Thoulet: Guide de oceanographie pratique, Paris, G. Masson, 1895.

weighed and dried, the dried sample was pulverized, and a second moisture was made on 20 Gm. of the ground sample. This sample was ashed, weighed and digested with hydrochloric acid, evaporated to dryness, and the process repeated. The residue was taken up with hydrochloric acid and water, filtered, and the insoluble residue incinerated in a platinum dish. This was recorded as the hydrochloric acid insoluble. This ash was nearly always white. This residue was treated with hydrofluoric acid. The loss of weight was recorded as silicon dioxide. In the majority of instances a faint to a weighable residue of iron stained material was noticed. This was dissolved in hydrochloric acid and added to the original filtrate. The results are shown in table 1. The average of twenty-one samples under 2 mg. per gram of dried lung gives an average of 1.13 mg. Any lung containing over 2 mg. of silicon dioxide per gram of dried tissue indicates undue exposure to a dusty atmosphere.

In table 2 the age, occupation, clinical diagnosis, anatomic diagnosis and the milligrams of silicon dioxide are recorded for comparison. Patients 267 and 337, working in dusty trades, clearly show the deposition of an increased amount of silicon dioxide. The clinical and anatomic diagnosis did not indicate pulmonary involvement in case 267. In table 3 the silicon content

TABLE 3.—Silicon Content of Lungs of Eight Persons Working in Dusty Atmospheres

Case	Ash, per Cent	Mg. SiO ₂ per Gram of Dried Tissue	Occupation
44	10.78	8.6	Mill stone sharpener
503	17.14	14.0	Stone cutter
327	12.36	2.4	Machinist
429	14.58	3.6	Engineering draftsman
463	19.99	4.3	Coal miner, 25 years
411	8.84	5.0	Stone quarry, 9 years
300	8.46	26.0	Granite cutter
446	5.50	10.9	Zinc miner

The lungs were preserved in solution of formaldehyde; the ash in cases 44, 503, 327, 429 and 463 was preserved in Kaiserling solution, which accounts for the higher ash content of these specimens.

in eight cases all presenting the history of working in dusty atmospheres is given.

The lungs of tuberculous subjects contain somewhat more of silicon dioxide than normal persons; some of this may come from inhalation or directly from the blood stream, as the blood of tuberculous subjects contains more silicon dioxide than that in normal persons. All clinical observations³² have shown that a silicotic patient is particularly liable to fall a victim to a tuberculous infection and that the silicotic process continues to advance after complete withdrawal from exposure. During life the diagnosis of silicosis depends on the history, clinical examination and roentgenographic evidence of the disease. Many times the roentgenograms are not decisive, so the diagnosis of silicosis, tuberculo-silicosis or tuberculosis is not made with certainty. At the autopsy the doubt may still linger and it is then that a chemical examination for the quantitative determination of silicon dioxide aids in arriving at the correct diagnosis.

CONCLUSION

1. The normal lung contains 1.13 mg. of silicon dioxide per gram of dried tissue.
2. A chemical examination of the lungs should be made in every case coming to autopsy, in which there is a history of a dusty occupation.

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ROENTGENOLOGIC ASPECT OF PNEUMONOCOONIOSIS AND ITS DIFFERENTIAL DIAGNOSIS

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In view of the more recent pathologic and histologic studies, added clinical experience and a much better knowledge of the condition, physicians are now at a loss to define pneumoconiosis and its most frequent industrial form of silicosis in any simple terms such as have been applied in the past. The general term of pneumoconiosis must still be adhered to because other dusts than silica are capable of producing definite histologic changes in the lung structure, as coal dust, certain silicates and possibly many others, but the effects of which require further study. It is the prevailing impression that pulmonary fibrosis is the essential and characteristic feature of pneumoconiosis in general, but in reality this is the terminal effect. Probably certain intermediate changes are of very considerable importance except in the way of the terminal disability. In discussing pneumoconiosis, we are giving consideration to only those histologic changes which are the result of the phagocytosis of dust particles and their introduction into the lymphatic system of the lungs, with the exception of asbestosis. This is another industrial type of pneumoconiosis in which the presence of the asbestosis bodies and their obstructive tendencies in the terminal air passages and the probable resulting minute atelectases are responsible for an important part of the clinical and pathologic features of the condition. Recently Cooke¹ has called attention to somewhat similar bodies in the lungs of anthracotic individuals. In the progress toward the terminal process of pulmonary fibrosis in pneumoconiosis, the processes of cell proliferation and infiltration, lymph block, cell necrosis and the factors in predisposition to infections must be given due consideration. There is also to be considered the uncertain effects of the inhalation and phagocytosis of unusually large quantities of silica in amounts far in excess of what can be accommodated to the production of immediate pathologic effects. Can this in itself predispose to infections such as pneumonia and tuberculosis as do the later effects on cell life and tissue structure? It will be realized, therefore, that any comprehensive definition of silicosis or even of pneumoconiosis in general would be far too complex for practical use. Furthermore, when do the effects of dust intake become really harmful and when may the condition be regarded as really beginning? Many city dwellers have the effects of silica in their lungs and yet do not acknowledge the acquirement of silicosis. Possibly the best that can be stated in the way of a definition is that pneumoconiosis is "the injurious effects produced in the lungs by the inhalation of unusual quantities of certain dusts." Even this is extremely vague in the statement of facts. The foregoing remarks may seem verbose, and yet they apply to points we are constantly asked to define from the legal standpoint.

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Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

¹ Cooke, W. E.: Silico-Anthraxis, Practitioner 129: 483 (Oct.) 1932.

There is, at the present time, long ago prognosticated, and now fully realized, a definite tendency for the condition under discussion to become an important and more and more extensive medicolegal problem. This is, no doubt, a natural course of events which represents a transition stage in the necessary recognition of pneumoconiosis as a compensatable hazard under certain circumstances, and practically unavoidable under our form of government. It is a necessary hazard in



Fig. 1.—Case of coronary thrombosis, the day after the attack, showing intensification of hilar and trunk shadows on the right side, which simulate the appearance of the perivascular-peribronchial-lymph node phase of pneumoconiosis.

the progress of commercial development of modern civilization and it must be realized that this progress has kept in advance of adequately developed devices for the full protection of the workers against the hazard in many instances. Hence there are many just claims for compensation in some form. Naturally, disability is the criterion for legal claims for compensation. Without adequate compensation laws or satisfactory means of carrying out those which may exist, there are bound to arise unjust claims for disability as a result of inefficient training and experience on the part of many individuals who attempt to diagnose an incapacitating pneumoconiosis or to differentiate between it and some other condition that may simulate it by roentgenographic appearances or clinical features.

Naturally, any one who attempts to make roentgenologic interpretation of pneumoconiosis must possess as a basis for his ability a thorough familiarity with the roentgenographic appearances of the normal, with those of the condition in question, and with those of any other condition that may simulate it. As roentgenographic appearances represent actual pathologic processes, the pathology of each condition must be understood. Moreover, it is necessary in every instance to know something of the physical factors concerned in the production of a possible or suspected pneumoconiosis.

There are definite characteristic appearances in pneumoconiosis that represent pathologic phases or stages. It is necessary to discuss differential diagnosis in connection with each of these. We² have called attention previously to our preference for the use of phases or types of appearances based on actual pathologic changes rather than the designation of roentgenologic features by numerical stages of progress, which, moreover, cannot be made to apply to the condition produced in all industries. We shall not, therefore, refer to the pathologic basis for each roentgenologic phase but simply describe the roentgen appearance of each in connection with differential diagnoses.

Pulmonary tuberculosis is a frequent complication of pneumoconiosis. The latter condition may be a pre-

disposing factor in the frequent incidence and serious consequences of the infection, especially when the progress of the pneumoconiosis is rapid. The two conditions often must be differentiated when only one exists or pneumoconiosis is present in only a minor degree and presumably not sufficient to exert any predisposition. Differentiation is necessary because the two conditions may produce quite similar roentgenologic appearances. This aspect of the diagnostic problem forms the subject of another paper, which is in the course of preparation.

ROENTGENOLOGIC PHASES OF PNEUMONOCOONIOSIS OR PREDOMINANT APPEARANCES

1. The perivascular-peribronchial-lymph node phase of pneumoconiosis is a definite entity based on well recognized histologic changes and characteristic roentgenographic features. The hilar shadows are more prominent than usual and of greater density and homogeneity. The trunk shadows and linear markings show increased prominence. This appearance cannot be regarded as pathognomonic of pneumoconiosis because it is produced by numerous other conditions, which will be discussed in differential diagnosis. Furthermore, the appearances just described should not be ascribed to pneumoconiosis unless shown to have arisen during serial examinations and unless all conditions producing like abnormalities can be excluded. This phase of pneumoconiosis is not incapacitating. It frequently does not exist by itself but often has associated with it a mild interstitial or a slightly developed nodular phase, or both. The following conditions may closely simulate the appearances of this phase of the condition.

Passive Congestion of the Lungs as a Result of Cardiac Decompensation.—In this condition the enlargement of the heart shadow, the abnormalities of the cardiac silhouette, especially in cases of mitral stenosis, and the clinical picture serve to establish the presence or absence of passive congestion. If pneumoconiosis is absent the appearances are likely to disappear with restoration of compensation, but not altogether in long standing cases. Marked emphysema is usually associated with pneumoconiosis and is apt to cause a certain amount of rotation of the heart, so that the sagittal roentgenogram does not convey a direct impression of cardiac size or shape. The lateral view is always necessary to clear up the diagnosis. Any phase of pneumoconiosis is likely to have its roentgenographic appearance greatly accentuated by passive congestion.

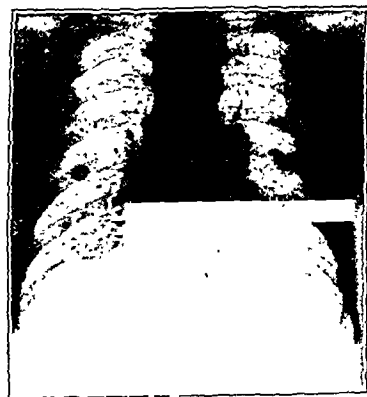


Fig. 2.—The same case as figure 1, four weeks later, showing the localized dilatation of the left cardiac border and the disappearance of the pulmonary evidence of decompensation.

Passive Congestion Associated with Coronary Thrombosis.—Following the incidence of coronary thrombosis, passive congestion with its roentgen appearances of prominent hilar and trunk shadows is commonly found for from three to six weeks after the attack and is

2. Pancoast, H. K., and Pendergrass, E. P.: A Review of Pneumoconiosis. Further Roentgenological and Pathological Studies, *Am. J. Roentgenol.* 26: 556 (Oct.) 1931; The Roentgenologic Aspect of Pneumoconiosis and Its Medico-Legal Importance, *J. Indust. Hyg.* 15: 117 (May) 1933.

especially noticeable in the right lung. This appearance and the clinical evidences of decompensation will clear up when compensation is established. If the thrombosed vessel is in the proper location, a very marked localized dilatation of the left ventricular curve will be noted where the muscle has undergone atrophy and has been largely replaced by fibrous tissue (figs. 1 and 2). We have seen one case of this kind mistaken for pneumonoconiosis.

Advanced Bilateral Bronchiectasis.—The dilated bronchi, retained secretions and associated tracheo-bronchitis characteristic of this condition will produce the appearance of greatly accentuated trunk shadows, which may simulate that of the phase of pneumonoconiosis under discussion.

Asthma.—This condition will produce various alterations from the normal roentgenographic appearances of the lungs. There is very apt to be an intensification of the hilar and trunk shadows and very often an associated coarse mottling of the lung fields. The latter appearance may appear or become accentuated during and immediately following an asthmatic attack. The two conditions may be associated, and what might be a very moderate degree of incapacitating pneumonoconiosis would have its appearance greatly accentuated by the asthma.

Infiltrating or Permeating Malignant Metastases.—Quite frequently, metastatic malignant processes in the lungs are of such a character as to take on the appearance of greatly accentuated hilar and trunk shadows which closely simulate the appearance of pneumonoconiosis. Naturally the individual is incapacitated and often in a way similar to the silicotic subject (fig. 3).

Polycythemia or Erythremia.—This condition may be regarded from two points of view. As an independent disease it usually has associated with it an increased prominence of the hilar and trunk shadows due to the engorged pulmonary vessels. On the other hand, high red cell counts, even sufficient to suggest polycythemia, are very frequently associated with pneumonoconiosis. There seems to be reason to believe that lung fibrosis and pulmonary arteriosclerosis can produce a condition perhaps akin to polycythemia and presumably due to impaired interchange of oxygen and carbon dioxide. Yater and Constam³ reported two cases of primary pulmonary arteriosclerosis, one an anthracotic patient with emphysema, and the other with a mitral stenosis. They state that secondary pulmonary arteriosclerosis involves the larger vessels and may be due to mitral stenosis, emphysema, congenital heart disease and conditions in which the lung volume is reduced, as tuberculosis and tumor. Polycythemia is one of the clinical phenomena. Rosenthal⁴ reported three cases of workers in dusty atmospheres or with irritating gases in whom there developed cyanosis and dyspnea and true polycythemia in one. Moschowitz⁵ believes that secondary pulmonary arteriosclerosis is very common. He found it in 6.5 per cent of autopsies and places the causes in the order of frequency as mitral stenosis, emphysema, pulmonary fibrosis, extensive pleural adhesions, kyphoscoliosis and congenital heart lesions. We have been interested in determining any relations between pneumonoconiosis and polycythemia, and in

our search for any true associations we have been inclined to accept the views of Wood⁶ that there are really two conditions to be considered. One is a compensatory mild polycythemia from lung fibrosis, and the other the true erythremia originating in bone marrow changes and capable of producing alterations in the roentgenographic appearances of the chest referred to at the beginning of this paragraph.

Mycotic Infections.—Most of the mycotic infections of the lungs with which we have had any personal experience have produced appearances simulating the nodular phase of pneumonoconiosis, but occasionally they may be confused with the perivascular-peribronchial-lymph node aspect of the condition. The differentiation may be most difficult or impossible.

2. The early interstitial stage of pneumonoconiosis also is based on well recognized histologic changes and characteristic roentgenographic appearances. It is characterized by a rather faint homogeneous haze, appearing first in the right mid or lower lung field and then in the left, and gradually spreading in extent. Small discrete dense nodules may or may not coexist. The hilar and trunk shadows are noticeably accentuated. There is more or less interference with diaphragmatic excursion. Aside from the differentiation of a tuberculous pneumonic process in the rapidly developing cases, the only other conditions to cause confusion in the proper interpretation of the homogeneous haze would be an interstitial pneumonitis or bronchosisinusitis and a rheumatic pneumonitis. These conditions should always be given careful consideration and the differentiation is an important one.



Fig. 3.—Infiltrating or permeating type of a metastatic malignant condition of the lungs. This patient had a retroperitoneal sarcoma as the supposed primary growths, which responded to irradiation. Metastases to the neck, mediastinum and lungs were far less radiosensitive and, while they were held in check for over three years, eventually ceased to respond.

3. The nodular phase is productive of the most characteristic and specular roentgenographic appearances of pneumonoconiosis. While it is quite typical of the condition, it does not occur in connection with all industries, especially when the intake of silica is unusually copious and the condition of silicosis is rapidly progressive. The characteristic appearance of the slowly progressing type is that of small, dense, discrete nodules throughout both lungs. There is no definite pleural involvement. In older cases there may be some interference with diaphragmatic excursion, probably as a result of interstitial fibrosis obscured by the associated emphysema. In the more progressive type the smaller nodules become larger and conglomerate and there are further evidences of interstitial fibrosis, indicated particularly by restricted diaphragmatic excursion and often peaking of the domes. The appearance may be simulated by a number of conditions, including tuberculosis of the perinodular silicotuberculosis type, tuberculous bronchopneumonia and miliary tuberculosis.

3. Yater, W. M., and Constam, G. R.: Pulmonary Arteriosclerosis, *M. Clin. North America* 12: 1689 (May) 1929.

4. Rosenthal, S. R.: Sclerosis of the Pulmonary Artery and Arterioles, *Arch. Path.* 10: 717 (Nov.) 1930.

5. Moschowitz, Eli: The Cause of Arteriosclerosis, *Am. J. M. Sc.* 178: 244 (Aug.) 1929.

6. Wood, F. C.: Personal communication to the authors.

The appearance is simulated also, in our experience, by the following conditions:

Nodular Metastatic Malignant Conditions of the Lungs.—Most cases of this kind are readily differentiated from nodular silicosis, but occasionally one encounters a case in which appearances are very similar because the metastatic nodules are small, unusually numerous and widely and symmetrically scattered.

Actinomycosis.—This may occasionally present an appearance like that of nodular silicosis, although the nodules are usually larger and less numerous in comparison with it and with similar infections to be mentioned later.

Sporotrichosis.—We have examined one case of this infection in which the appearance was so identical with that of the nodular phase of silicosis that we could not be convinced that the condition was not the latter except by the lack of exposure and by subsequent observations at autopsy. Miliary tuberculosis was also considered as a possibility and, in fact, the alternative.



Fig. 4.—Leptothrix infection of lungs presenting an appearance of symmetrical diffuse soft nodulation simulating nodular pneumoconiosis.

Leptothrix Infection.—We have encountered one case of this kind presenting an appearance quite similar to nodular silicosis (fig. 4); but the diagnosis was readily made by culture from the sputum and there was no occupational history.

4. The advanced diffuse or terminal fibrosis stage of silicosis is to be differentiated mainly from chronic diffuse tuberculosis or an accompanying tuberculosis is to be determined. Occasionally a case

showing massive fibrotic areas mesially located may present an appearance resembling a mediastinal tumor.

ASSOCIATION OF PRIMARY BRONCHOGENIC CARCINOMA

Primary bronchogenic carcinoma is arousing much interest in connection with pneumoconiosis because of the possibility of the latter condition acting as a predisposing cause, and the time has arrived to attempt some settlement of this question. The publicity of the historic and very obvious predisposition of the Schneeberg miners to lung cancer and the more recent knowledge of a similar state of affairs among the Joachimstal underground workers has led to a belief that pneumoconiosis may play a part in the etiology of bronchial carcinoma. In previous communications⁷ we stated definitely that we had never encountered a case of lung cancer associated with pneumoconiosis in any of the individuals examined by us for either condition or observed evidence of the combination in roentgenograms interpreted of several hundreds of other cases of

the latter disease. During the past fifteen months, however, we have examined two proved cases of bronchogenic carcinoma in association with pneumoconiosis and have been accorded the privilege of referring to a third case the roentgenograms of which we have seen recently. This experience has made us give more serious consideration to the question as to whether there is or is not a predisposition which might lead to making primary lung cancer in a case of pneumoconiosis a compensatable disease. The three cases are summarized briefly as follows:

CASE 1.—J. M., a man, aged 66, referred from the service of Dr. Alexander Randall, University Hospital, Aug. 17, 1932, for routine roentgen examination, had worked in a coal mine for twenty years but not during the past twenty years. Roentgenograms showed very definite evidence of a moderate pneumoconiosis, but not of an incapacitating degree. In addition, a mass lesion was found involving the right lower and possibly the middle lobe, which was regarded with suspicion as a secondary effect of bronchogenic carcinoma. Bronchoscopic examination by Dr. Gabriel Tucker revealed a fungating mass extending from the carina down into the right lower lobe bronchus with evidences of mediastinal metastasis. Biopsy confirmed the suspicion of carcinoma.

CASE 2.—A. G., a man, aged 45, referred from the service of Dr. J. T. Ullom at the Chestnut Hill Hospital, Feb. 17, 1932, for examination to determine the cause of a slightly productive cough, pain in the right chest posteriorly and 20 pounds (9 Kg.) loss in weight during a period of two months, had worked in a coal mine for thirty years without becoming incapacitated. Roentgenograms showed a definite pneumoconiosis but of very moderate degree. There were evidences of atelectasis of the right lower lobe leading to a suspicion of a bronchogenic growth, and bronchoscopy was advised. This was performed by Dr. C. L. Jackson and revealed a growth in the right lower lobe bronchus which biopsy proved to be carcinoma.

CASE 3.—This case is referred to through the courtesy of Dr. C. L. Jackson, who first examined the man, Nov. 12, 1931, and recently sent us the roentgenograms for review. The patient had been a coal miner and the roentgenograms showed a nodular phase of pneumoconiosis throughout the right lung. The left lung was the seat of an extensive atelectasis and drowning. Autopsy nearly a year later confirmed the diagnosis of bronchogenic carcinoma.

Dr. Jackson kindly sent us the roentgenograms of three other cases of coal miners in whom bronchogenic carcinoma has been diagnosed. Two are still living and the third died, but there were no bronchoscopic or autopsy confirmations in any of them. We examined a female glass factory worker of twenty-two years' occupation, in 1931, and found evidences of a moderate degree of silicosis and appearances suggesting carcinoma in the left lower lobe bronchus. The bronchoscopic observations also were suggestive, but a biopsy was not thought advisable and autopsy was not permitted. These cases are all suggestive, of course, but are valueless for statistical purposes because, first, of the lack of histologic confirmation and, secondly, there is no characteristic roentgenographic appearance of primary bronchogenic carcinoma.

Notwithstanding these personal experiences, we are not convinced that there is ample justification at the present time for a belief that pneumoconiosis is a predisposing factor in the incidence of primary bronchogenic carcinoma, and for the following reasons:

1. We have had the opportunity of studying a large number of cases of pneumoconiosis from various industries and have been so situated in a medical center and in an institution well equipped with an active bronchoscopic clinic as to have referred to us for examination or consultation many cases of primary lung cancer.

7. Pancoast and Pendergrass (footnote 2, first reference). *Pneumoconiosis (Silicosis): A Roentgenological Study with Notes on Pathology*. New York, P. B. Hoeber, Inc., 1926.

Notwithstanding these facts we have seen only three proved cases of bronchogenic carcinoma in association with pneumoconiosis. While Weller⁸ states that other authors have reported cases among coal miners, sandstone workers, cigar makers and in many other occupations, we cannot accept isolated reports as conclusive evidence, especially as every male patient with cancer of the lung presumably has had a job of some kind.

2. The Schneeberg and Joachimstal cases were obviously due to some factor different from the usual causes of pneumoconiosis, and radium emanation or arsenic would seem to have been the most likely of the unproved predisposing causes.

3. While animal experimentation as carried out by Willis,⁹ Willis and Brutsaert,¹⁰ Murphy and Sturm¹¹ and others has suggested that certain cell hyperplasias producible through the action of dusts, tar and other irritants may be precancerous conditions, there is no absolute proof that they are. Moreover, similar hyperplasias are noted bronchoscopically quite often in the human subject and are invariably reported histologically as inflammatory in origin. The Jacksons¹² report that on many occasions they have removed tumor-like bodies obstructing a bronchus and the histologic examinations have shown nothing except chronic inflammatory tissue. These growths have been regarded as serious because of the resulting secondary effects of atelectasis, drowned lung, suppuration, abscess and bronchiectasis. The etiologic factors have been regarded as stagnation of secretions, especially of a purulent character, and the specific granulomas—tuberculosis, syphilis and fungous infections. Any inflammatory process in the bronchi may be associated with a nodule that assumes tumor-like form, and mechanical contraction through elongation and shortening of the bronchi during respiration might mold protuberant inflammatory new formations into tumor-like form.

Fried,¹³ like many others, is inclined to ascribe bronchogenic carcinoma to infections and inflammatory conditions. Of the three types of cells found in the bronchial mucosa—ciliated, goblet and "basal" epithelial cells—the last is concerned in the regeneration of respiratory mucosa. Metaplasia of these cells occurs in numerous bronchopulmonary diseases, as influenzal pneumonia, measles, diphtheria and whooping cough, and Fried regards this metaplasia as, in a sense, a precancerous state. He believes that only the basal cells produce cancer. This opinion is not shared by others. Fox,¹⁴ for example, found three cancers with mucous producing or goblet cells among thirty-seven positive biopsies in eighty-five referred bronchoscopic tissues.

A brief review of the Schneeberg and Joachimstal situations seems worth while for a better understanding of the relations between lung cancer and mining operations. Weller⁸ states that cancer among the Schneeberg miners "is probably the most extraordinary and at

the same time the least understood of all associations which have been discovered to exist between occupation and the incidence of neoplasm." Literature on the subject of the high mortality among the underground workers of the Schneeberg cobalt mines in Saxony began as early as 1500. Weller refers to the report of Thiele, Rostoski, Saupe and Schmorl¹⁵ of official investigations of 154 miners during a period of nearly four years, during which time twenty-one died, and thirteen of these with a diagnosis of primary lung cancer made at autopsy. Two of these men had not worked in the mines for many years, which we believe makes the theory of radium emanation as the etiologic factor a debatable point, although it may not exclude it. Weller also refers to the investigation of the mines by Rostoski, Saupe and Schmorl.¹⁶ There was much hard rock drilling and a great amount of dust. The ore contained iron, bismuth, tin, zinc, lead, manganese, uranium, cobalt and nickel, chiefly in combination with sulphur and arsenic. Because of the uranium content, and therefore radium also, the ore was radioactive, as was also the mine atmosphere up to as high as 50 miche units. The possible etiologic factors considered were silica, chemically active dusts, especially arsenic and in volatile form, radium emanation and the flora of the damp mines. Many of the men had demonstrable silicosis. The exact factor still remains uncertain. In regard to the radium emanation, Martland¹⁷ states that the active deposit present after death of the individual would be entirely too small to be measured.

At Joachimstal, in Bohemia, and 30 kilometers from Schneeberg, are the mines which have been famous as a source of radium, although originally they were worked for silver, cobalt, nickel, bismuth and arsenic. The mining for uranium preceded the discovery of radium. In 1929 and 1930, Pirchan and Siki¹⁸ investigated these miners, who also had been known to have a high mortality rate for pulmonary diseases. During that period nineteen miners died, ten recently active and nine pensioners. Thirteen of these were examined post mortem, and primary lung cancer was found in nine. Tuberculosis, pneumonia and trauma were the other causes of death. Unfortunately, careful studies were not made from the standpoint of the etiology of the cancer. The atmosphere of the mines had approximately the same radioactivity as at Schneeberg. Unlike the Schneeberg miners, they presented no marked degree of silicosis. We cannot help but feel that radium emanation and arsenic must be strongly suspected as etiologic factors in both of these mines, although it would be most difficult to obtain positive proof for the implication of the former.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SAYERS, LANZA, MCNALLY,
AND PANCOAST AND PENDERGRASS

DR. EMERY R. HAYHURST, Columbus, Ohio: Dr. Lanza's paper, introduces much needed evidence, since the status of pneumoconiosis has run a continuous gantlet of false ideas. Virchow declared against dust entering the lung parenchyma and that pigmentation was only altered blood. Zenker disproved this and Richardson in 1875 found 47.78 per cent of silica in the lung ash of a potter. In 1872 Hirt championed the mechanical injury theory, and only within the past six years has the

15. Thiele, Rostoski, Saupe and Schmorl: Ueber den Schneeberger Lungkrebs, Muenchen, med. Wchnschr. 71: 24, 1924.

16. Rostoski, Saupe and Schmorl: Die Bergkrankheit der Erzbergleute in Schneeberg in Sachsen, Ztschr. f. Krebsforsch. 22: 360, 1926.

17. Martland, H. S.: The Occurrence of Malignancy in Radioactive Persons, Am. J. Cancer 15: 2435 (Oct.) 1931.

18. Pirchan, A. and Siki, H.: Cancer of the Lung in the Miners of Jachymov (Joachimstal): Report of Cases Observed in 1929-1930. Am. J. Cancer 16: 681 (July) 1932.

8. Weller, C. V.: The Pathology of Primary Carcinoma of the Lung, Arch. Pathol. 7: 478 (March) 1929.

9. Willis, H. S.: The Pulmonary Effects of Over Three Years' Exposure of Guinea-Pigs to Silica Dust, Am. Rev. Tuberc. 17: 253 (March) 1928.

10. Willis, H. S. and Brutsaert, P.: Tumor-like Structures in the Lungs of Guinea-Pigs Artificially Exposed to Silica Dust, Am. Rev. Tuberc. 17: 268 (March) 1928.

11. Murphy, J. B., and Sturm, E.: Primary Lung Tumors in Mice Following the Cutaneous Application of Coal Tar, J. Exper. Med. 42: 693 (Nov.) 1925.

12. Jackson, Chevalier, and Jackson, C. L.: Benign Tumors of the Trachea and Bronchi, with Special Reference to Tumor-like Formations of Inflammatory Origin, J. A. M. A. 99: 1747 (Nov. 19) 1932.

13. Fried, B. M.: Primary Carcinoma of the Lungs: III. Histogenesis and Metaplasia of Bronchial Epithelium, Arch. Path. 8: 46 (July) 1929.

14. Fox, H.: Personal communication to the authors.

chemical theory come to the fore. Forty years ago, granite workers were considered immune. Within this century Calmette contended that all pneumoconiosis is of intestinal origin. Prior to Collis's studies of twenty years ago, nodular fibrosis was considered the product of any hard dust. The coexistence of tuberculosis was recognized even before the germ of this disease was discovered. Thus there was a "dust phthisis" as well as a "tuberculous phthisis." It remained for the radiologist to clarify the etiologic picture during life, and Dr. Lanza was with Dr. Childs in the earliest of these group studies in America, in 1914 and 1915. Illinois adopted a blower law in 1897 for the protection of polishers and others, which had greatly reduced complaints by 1910, although autopsies in Cook County Hospital between 1908 and 1913 encountered typical "dust phthisis." In Ohio, from 1913 to 1915, dust from flint mills in the pottery industry was recognized as the most hazardous, thus tallying with the 1930 British report, potteries leading, with 241 fatal cases in fifteen industries. Silicosis has been officially reported in sixteen industries in Ohio, but the total of cases is not large. Intensive investigation was made in only one place, the Berea sandstone works, in 1926. Here, out of 912 men, 260 had silicosis, and 238 others had increased pulmonary fibrosis. The dust contained from 93 to 97 per cent of silica. However, only 1.9 per cent of active tuberculosis was found, while general disability was likewise low. A check-up in 1932 of the county tuberculosis records revealed that only five deaths had occurred from tuberculosis among these workers in the intervening six years, and but five active cases were then on record. A more complete study, however, is wanted. If the hazard is in direct relation to the fineness of the dust, the British procedure of weighing the dust per measured volume of air would appear better than the present American one of attempting to count the dangerous particles, since ultramicroscopic dust cannot well be counted. Its amount may be appreciated, however, in a beam of strong light. Is not the essential personal factor the volume of air inspired per unit time of exposure? Owens in 1921 found that quiet breathing may not carry any dust into the deeper parts of the lungs but that deep breathing may carry over 20 per cent of that inhaled. The pace of work is therefore very important.

DR. BENJAMIN GOLDBERG, Chicago: Clinically, concern in silicosis is primarily with the care of the patient and secondly with the medicolegal aspects of this condition. The etiologic history is important in making a diagnosis. Also of importance are conditions which may be present in the patient that tend to stimulate fibrous tissue formation more readily. The changes outlined by Drs. Pancoast and Pendergrass in their description of three stages may occur independently, in sequence or concurrently, in some instances. When one sees an involvement in and about the pulmonary hilus, associated with a clogging of the lymph channels by dust phagocytes, depicted roentgenologically by increased shadow densities radiating from the hilus into the pulmonary midzone, an unproductive cough is usually present, with small moist râles in that region, which moisture may extend to the lower perimedastinal region, where lymph node fibrosis has occurred and a more or less complete blockage of this channel is present. Sometimes areas of exudation are seen in the region between the third and the sixth rib toward the periphery of the lung. This is evidenced clinically by a productive cough with moderate amounts of sputum, a roughening of the respiratory murmur throughout this area, and slight dyspnea on exertion. In the more extensive involvement of the later periods, some of the hyalinized areas that are found in silicosis undergo liquefaction, producing small cavities, which may coalesce to form large ones and when they occur at the bases of the lung may resemble bronchiectasis. Larger quantities of sputum result from such pathologic change. There are also interalveolar and bronchiolar interstitial changes which interfere with gaseous interchange, so that dyspnea becomes a more marked symptom. When secondary infection involves the cavities, it produces toxic manifestations, evidenced by severe loss of appetite, intense fatigue and occasional night sweats. Concerning tuberculosis and silicosis, the determination of the time in which the patient developed tuberculosis is, in the presence of coexisting silicosis, very difficult, unless the history can be used as the determining criterion. Patients with silicosis who have an impaired resonance in the pulmonary area above

the third rib, with moist râles limited to this area, in the absence of an acute respiratory infection should be considered as having tuberculosis. When the moisture extends throughout the lung or the lesion is largely a basal one, the presence of tubercle bacilli in the sputum is the only positive determining criterion, since the physical manifestations and shadow densities on roentgen films may simulate both disease conditions.

DR. E. P. PENDERGRASS, Philadelphia: One of the worst features of silicosis is the predisposition it may create to the contraction of certain respiratory infections, especially tuberculosis. The workers in any dusty industry are entitled to the same incidence of tuberculosis as the remainder of the civil population in the vicinity. When a dusty atmosphere associated with the industrial employment is productive of definite silicosis, the incidence of tuberculosis is considerably and obviously increased thereby. Silicosis comes under suspicion as a predisposing factor in the infectious process. This does not mean, however, that every case of tuberculosis in the industry has the infection brought about either primarily or secondarily through the agency of the dust. Any conclusions drawn should be submitted only after a careful correlation of the clinical studies, roentgenographic interpretation, occupational history, past history of the industry with relation to large groups of workers, and physical surroundings. The serial roentgen examination, if carefully performed, is of the utmost value in portraying the pathologic changes, but I am sure it is obvious that in a number of instances it is exceedingly difficult to arrive at a definite diagnosis. We have recently restudied our entire group of pneumoconioses at the Hospital of the University of Pennsylvania and have recorded certain roentgenographic observations which may help in the determination of the presence or absence of a superimposed tuberculosis, and this is to be the subject of another presentation. These observations, if true in the majority of instances, may be of distinct value in helping to decide as to the disposition of an employee in a given occupation; furthermore, we are convinced that observations on a certain group of workers in one industry cannot necessarily be accepted as a standard for an entirely different industry.

DR. RICHARD H. JAFFE, Chicago: The different types of dust cause different forms of pulmonary lesions; and since in human cases of pneumoconiosis one is usually dealing with mixtures of several kinds of dust, the resulting pathologic processes are, as a rule, combinations of the changes produced by the single components of the dust. The most common combination is that of quartz and coal. Pure silicosis is exceedingly rare. Among the inorganic matters that may enter the lung, silicon dioxide is particularly irritating. There are several factors that account for the irritating action of the silicon dust. This dust is very rich in the finest particles, which easily reach the alveoli of the lungs. The sharp angles of the fine quartz particles produce innumerable small traumas to the alveolar wall. There are many evidences which indicate that the quartz is gradually dissolved in the weakly alkaline tissue fluids. The specific silicotic lesion is a miliary nodule which consists of a dense, hyaline center and a more cellular periphery that fuses with the stroma of the lung. The best method to demonstrate the silicon in the lung is micro-incineration, as recommended by Policard and his associates. In the earlier stages of silicosis the lung is studded with small, gray nodules, which are most numerous in the midportions of the lung with the best respiratory ventilation. The interlobular septums and the connective tissue about the bronchi are thickened and contain the characteristic nodules. In the advanced stages, large portions of the lung are found to be replaced by a very dense, deeply pigmented scar tissue, which feels like wood and cuts with great difficulty. It seems that it is only under the influence of a complicating tuberculosis that silicotic nodules develop in the lungs of granite cutters. In general, a considerable number of investigators believe that the silicotic nodules are practically always the result of the combined action of the quartz dust and tubercle bacilli. No doubt, silicosis greatly increases the disposition to tuberculosis and modifies its course but, according to my experience, inhalation of the finest quartz particles alone is sufficient to produce a progressing pulmonary fibrosis with nodular and nodose formations.

DR. C. O. SAPPINGTON, Chicago: Two statements in the paper by Dr. McNally are of particular significance: that any

lung containing more than 2 mg. of silicon dioxide per gram of dried tissue indicates that the subject has had undue exposure to a dusty atmosphere; that the blood of tuberculous subjects contains more silicon dioxide than that of normal persons. The problems suggested here would involve relationships between the silicon dioxide content of the circulating blood, the content of pulmonary tissue both in subjects of tuberculous type and in those from dusty occupations, and the relationships between these facts, if any. It seems to me that the next step in this investigation would be to determine the silicon dioxide content of the blood in a group of tuberculous persons, in another group having a measured dust exposure and a clinical diagnosis of silicosis, and in a control group. By comparing the results of such a study, standards could probably be obtained for a clinical test that would quite likely be of greater relative value than quantitative examinations done on necropsy material. Efforts should also be made to find out the possible association between known periods of dust exposure, concentration and particulate distribution, and the silicon dioxide content of lung tissue. Through the establishment of these quantitative standards, and their association with or relationship to variable factors either within the body or in the industrial environment, the diagnosis of these conditions could be put on a better scientific basis and lead to the acquisition of a better type of factual evidence than it is possible to obtain at the present time.

DR. ROBERT T. LEGGE, Berkeley, Calif.: Dr. Lanza stated that a person can develop silicosis in two years. Dr. Sayers stated that it takes thirteen years. Investigators in South Africa state that it requires ten and one-fourth years. Of course these differences of opinion give a good deal of leeway to lawyers, particularly in medicolegal cases. Drs. Pancoast and Pendergrass state that a person can have silicosis and still not have fibrosis. It has been stated that the three stages that were formerly thought to be ideal, first, second and third stages of silicosis, are now no longer considered. It seems to me that the whole question of silicosis must be rewritten. Not long ago I did some original work in silicosis as a result of diatomaceous earth, and one of the things noticed in this particular form from a diagnostic point of view was the large percentage of clubbed fingers.

DR. J. J. SINGER, St. Louis: The burden of many legal cases has been actually forced on the medical profession. I think it places physicians in a very serious situation. All we can do is to state our observations as we find them. I think we must get in closer contact with the lawyers and come to an understanding as to what is expected of us and what we expect of lawyers. If the lawyers would teach us the legal value of our testimony, we could be of real service.

DR. C. F. N. SCHRAM, Beloit, Wis.: I was called on to drive 125 miles to give testimony in regard to industrial work and my opinion did not coincide with the information wanted. I was not put on the stand but a hurry call was sent to a pathologist who has never spent any time in industry and he testified as wanted. Three physicians who testified for the opposing side gave opinions which coincided with mine. The night before, twenty-six physicians meeting in the Rock County Medical Society voiced the unanimous opinion, which agreed with the observations of the three local physicians and with my own. There is only one thing to do and that is to stop the dust. It can be stopped more easily if a commercial feature can be made out of handling it. I learned recently that a certain company in the United States is buying finely divided silica dust in fifty carload lots.

DR. A. J. LANZA, New York: The length of time it takes to develop silicosis depends, broadly, as I tried to make clear, on the dosage of silica. Heavy dosage, steady work, quicker results; lighter dosage, intermittent work, slower results; in other words, miners who spend their summers in working in the harvest fields, and many of them do so, obviously will develop silicosis more slowly as compared with their fellows working in the mines twelve months a year. The development of silicosis is usually a matter of years, but, given an intense enough dosage, it may be a matter of months. I don't see that in that statement there is any reason for bewilderment. This emphasizes what another commentator said: that a physician, in trying to judge a patient of this type, must be familiar with the nature and circumstances of his occupation.

DR. R. R. SAYERS, Washington, D. C.: Drs. Pancoast and Pendergrass stated that one cannot make a diagnosis unless one has all the facts. One must have the individual's history, his occupational history, the history of the symptoms, the physical examination and the radiologic evidence.

DR. HENRY K. PANCOAST, Philadelphia: The great difficulty in this country with silicosis is the law and not the medical profession. We as physicians are a little lax because of a lack of thorough knowledge about it, but certainly our form of government is more at fault. We have to depend on every state passing some kind of silicotic compensation law. The states have been very slow in doing it and each one passes a different law, and it upsets industry and brings about a confusion. If the federal government had control of the situation, I believe that this question would have been settled long ago, but it is not going to be settled satisfactorily under existing conditions. The Public Health Service is willing to help, but is its help accepted by the different states? It is not. Another phase of the law that makes difficulties is that it accepts testimony given by different physicians before juries. If the expert testimony of physicians who are experts could be kept away from juries, I think that there would be less disagreement. That applies to other suits besides those of silicosis, and certainly silicosis acts, in my mind, will never operate properly or be satisfactory unless there is a medical board attached to each compensation board.

DR. WILLIAM D. McNALLY, Chicago: I think silicosis is a depression disease and that is why physicians are seeing so much of it. Pneumoconiosis is being claimed by a great number of people in Chicago. In the future there will appear a number of claims caused by inhalation of flour. Leather is another substance that is going to claim a few cases. In that instance the chemical examination will not be able to disclose how much flour there was or how much leather. When an autopsy can be performed, the silicon dioxide content of the lung is the deciding factor which cannot be denied.

URINARY TEST AS INDEX OF ABSORPTION OF GALLBLADDER DYE WHEN GIVEN ORALLY

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The oral method of administering gallbladder dye has failed to reach complete parity with the intravenous method primarily because it is impossible to make sure that the dye has been absorbed from the intestinal tract when given by mouth.

Further, although it has been shown that refinements¹ in the method of administering dye by mouth have tended to minimize the number of nonabsorptions, still in a given case it is impossible to make sure that the nonvisualization of the gallbladder is not due to nonabsorption of the dye.

Since it is probably physiologically impossible to make sure that anything given by mouth will be absorbed in all cases, we feel that the problem of oral dye administration and absorption can be greatly clarified if it can be proved in the questionable cases whether the dye has been absorbed. Obviously, this could be ascertained if repeated blood specimens were examined at suitable intervals after the administration of the dye by mouth, but this is well nigh impossible in private office and ambulatory patients.

From the X-Ray Department of Roper Hospital and the Department of Physiology of the Medical College of the State of South Carolina, Charleston, S. C.

1. Kirklin, B. R.: Necessity for Accurate Technic in Oral Cholecystography: Errors Attributable to Technical Lapses, *Am. J. Roentgenol.* 25: 595 (May) 1931.

We had for some time felt that some portion of the sodium tetraiodophenolphthalein must be excreted in the urine, from the nature of the compound, and had actually begun some animal experimentation along this line when we found that it had already been established by an excellent piece of work by A. J. Delario.² Delario found that, while 90 per cent of the dye was being extracted from the blood by the liver cells, the kidneys were excreting the other 10 per cent.

Normally the urine does not contain iodine in detectable quantities, by the most refined methods of testing, since the average daily excretion by the kidneys is only between 25 and 50 gammas.³

We first began our test by having patients bring in three specimens of urine as follows:

Specimen 1. Before taking the dye. This is a control to make sure that the patient is not excreting iodine from some other source.

Specimen 2. Before going to bed; that is, about five hours after the dye has been taken.

Specimen 3. The first voided specimen the morning after the dye has been taken.

Since we failed to obtain a positive iodine test in any of the second specimens, this part of the test has been discontinued. The time interval after the dye has been taken is evidently not long enough for absorption and excretion by the kidneys.

The test is a modification of the original Kendall test. It is essentially one of oxidizing the iodine from its organic form (in the tetraiodophenolphthalein sodium), fusing, and liberating the iodine from its inorganic state:

To about 50 cc. of urine, from 1 to 2 Gm. of stick sodium hydroxide is added. The mixture is heated moderately, to prevent spattering, in an evaporating dish. When evaporation is nearly complete, exactly 1 Gm. of powdered potassium nitrate is sprinkled over the extract, and this mixture is fused at moderate heat until the carbon has all disappeared and the "melt" appears white. When the "melt" has cooled, 20 cc. of distilled water is added, in which the "melt" readily dissolves. The solution is then filtered and the filtrate is acidified with dilute sulphuric acid until blue litmus is turned red. About 0.5 Gm. of sodium nitrite is then added to the filtrate and the mixture is placed in a separatory flask. Five cc. of chloroform is added and the mixture shaken vigorously. A pink color in the chloroform layer indicates the presence of iodine.

A satisfactory test can be done with as little as 20 cc. of urine. About the only source of error is that the mass may be charred by too much heat, after the gram of powdered potassium nitrate has been added, and will not dissolve in the distilled water.

If Specimen 1 does not give the iodine test (ruling out the possibility of some iodine medication), a positive test of the specimen the morning after the dye has been taken must indicate that some of the dye, which contains 53 per cent iodine, has been absorbed from the intestinal tract and gotten into the circulation.

We have arbitrarily set up a colorimetric standard of 3 degrees of absorption:

1. *Good Absorption.*—This is indicated by a deep purplish pink and is the color that we have obtained as a routine in the normal gallbladder visualization. This color can be reproduced by dissolving the 5 mg. of resublimed iodine in 100 cc. of chloroform.

2. *Moderate Absorption.*—This is indicated by an ordinary pink and can be simulated by 2.5 mg. of resublimed iodine in

100 cc. of chloroform. We have obtained this degree even with excellent visualization of the gallbladder in patients with poor kidney function.

3. *Poor Absorption.*—This gives a very faint pink that is best seen against a white background, and the standard is made by dissolving 1.25 mg. of resublimed iodine in 100 cc. of chloroform. When the absorption is poor, we believe the examination should be repeated unless there is normal visualization of the gallbladder.

So far the only source of error we have encountered has been an erroneous index of the degree of absorption in patients with poor kidney function, as mentioned.

In case of nonvisualization of the gallbladder after the dye has been given by mouth, if the described test is positive there is no question of nonabsorption of the dye, and the gallbladder, liver, or duct system must be abnormal.

THE PATHOLOGIC REACTION IN VARIOUS PNEUMONOCOONIOSSES

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Anatomic and roentgenologic studies of the lungs of persons exposed to various types of industrial dusts have demonstrated that inhaled foreign substances do not all produce the same kind of pathologic reaction. Present knowledge is limited by the lack of a sufficient amount of autopsy material to illustrate the evolution of all types of pneumoconiosis, but the forms produced by pure chemical substances tend to fall into one of three categories. Such disease is predominantly either linear, nodular or diffuse in character. A linear pattern characterizes the general type of response to most inhaled inert foreign materials; nodular lesions are apparently confined to silicosis, while diffuse reaction is exemplified in asbestosis. Mixed patterns are produced by dusts such as granite, which is composed of several different elements. The stages in the reaction to these well known dusts will be analyzed in an attempt to explain the variations in the resultant pathologic picture. This can be done most concisely by considering in turn the various anatomic structures involved.

PHAGOCYTOSIS

Particles that elude the protective mechanisms of the upper respiratory tract reach the respiratory bronchioles and finer air spaces given off from them. At first there is a marked tendency for initial localization to occur in the subpleural air spaces. Within their lumens the particles are phagocytosed by free ameboid cells of the histiocytic series which originate in the nearby walls. The behavior of these cells is modified by the character of the foreign material with which they have to deal. With the majority of fine dusts the same cell continues to ingest particles until it can hold no more and as a consequence its power of locomotion is limited or destroyed. The cells that are grossly overloaded appear never to leave the air spaces but remain until they disintegrate and liberate the dust particles, which are again taken up by new phagocytes. Less heavily laden cells of the first or subsequent generations make their way along the walls of the air spaces until they reach the peripheral ends of the lymphatic vessels, which they enter by penetrating the cluster of lymphoid cells about the termination of these vessels. By this mechanism

2. Delario, A. J.: *Paths of Absorption and Excretion of Sodium Tetraiodophenolphthalein*, J. Lab. & Clin. Med. 16: 329 (Jan.) 1931.
3. Personal communication to the authors by Harry Von Kolnitz, chemist, South Carolina Food Research Laboratory, affiliated with the Medical College of the State of South Carolina.

From the Saranac Laboratory for the Study of Tuberculosis of the Edward L. Trudeau Foundation.

the air spaces are more or less effectively cleared of dust.

Of the materials that have been studied, phagocytosed silicon carbide tends to be held within the air spaces more or less indefinitely; much of the granite is also retained *in situ*, although many of the less heavily laden cells reach the lymphatic system; coal-containing cells migrate more rapidly.¹ Silica² belongs in a special category. Only a few particles of this material are ingested by each cell, and they are sufficiently irritating so that they stimulate ameboid activity. The active cells moving toward the lymphatic system collect in nodular masses about the lymphoid tissues at its periphery. Asbestos fibers also constitute another special type of foreign body.³ Because of their shape and size, most of them are not inhaled into the terminal alveoli but lodge on the irregular surfaces of the respiratory bronchioles. They become surrounded by giant phagocytes, which carry them, for the most part, directly into the walls of the bronchiole. The lymphatic system seems to play little part in disposing of such fibers. In some of the human cases of asbestosis which have come to autopsy, sections of the lungs show large amounts of black granular pigment in addition to the fibers. This granular material is partially eliminated through lymph vessels.

LYMPHATIC ELIMINATION

The dust cell that enters a lymph vessel should theoretically remain within the lumen until it either settles out in lymphoid tissue along the course of the vessel or is transported to the tracheobronchial lymph node at its termination. When the number of particles is excessive, physiologic mechanisms are inadequate and many phagocytes with their ingested material pass through the wall of the vessel into the surrounding areolar tissue. Such abnormal migration is intensified by obstructive lesions in the intrapulmonary and mediastinal lymphoid tissues and by hypothetical alterations in the permeability of the lymphatic endothelium, although the latter has not yet been demonstrated. The presence of foreign particles in perilymphatic areolar tissue will provoke a reaction, the severity of which varies with the character of the material concerned; it may consist of an infiltration of phagocytes and lymphoid cells or it may take the form of granulation tissue which perhaps organizes as scar. In any event, such a reaction is linear in distribution and it tends to thicken the structures through which the lymphatic trunks pass; namely, the bronchi, pulmonary artery and veins, the interlobular septums and the pleura.

This type of linear perilymphatic reaction is an essential part of the response to most inhaled dusts and with many of them it is practically the only lesion demonstrable. In the case of silicosis it occurs in the early stages of the disease, but it is later overshadowed by nodular formations. Its importance in asbestosis is not altogether clear for lack of sufficient material for study. Early human and experimental animal disease shows no apparent participation of the lymphatic system. In the late stage human cases there is dense fibrosis in the position of the lymph vessels, but the same reaction also involves all other portions of the pulmonary stroma. Its effect is visualized in roentgenograms of many forms of pneumoconiosis as an accentuation of the linear shadows cast by the blood vessels.

LYMPHOID TISSUE

As has been noted, phagocytes pass through lymphoid tissue to enter the lymph vessels, and they encounter numerous collections of this nature along the course of the vessels. In the absence of infection, most dusts, such as coal or silicon carbide, do not tend to remain within the intrapulmonary lymphoid tissues but accumulate in the tracheobronchial nodes into which the lymphatics empty. Quartz-containing cells, on the other hand, collect in masses in and about the lymphoid tissues. The physicochemical properties of this dust stimulate the development of fibrous tissue within the nodule. Such formations encroach on and compress the adjacent lymph vessels, so that the flow of lymph is impeded. As a result there is a progressively increasing tendency for the phagocytes to migrate outward through the walls of the vessels, as already described.

The formation of nodules in lymphoid tissue is seen in roentgenograms of early silicosis as a fine beading along the trunks.

PULMONARY PARENCHYMA

The initial accumulation of phagocytes in the terminal air spaces, and the slight amount of associated proliferation in the adjacent alveolar septums, constitute a parenchymatous reaction, which characterizes the early stages of any form of pneumoconiosis. In silicosis this effect is soon overshadowed by more pronounced changes in the trunks, but in the less marked disease produced by silicon carbide or aluminum oxide it continues to be one of the chief evidences of reaction. While the individual areas of parenchymatous disease are relatively insignificant, the superimposition of great numbers of such lesions is sufficient to intercept the x-rays and cast a faint haze on the film. The change is most marked at the periphery of the lung, particularly in its midportions, because of the tendency of inhaled particles to localize beneath the pleura.

The fibrous element in asbestos dust apparently exerts its major effect in the parenchyma of the lung. The phagocytosed fibers are carried into the walls very near the place in which they were ingested and there fibrous proliferation is initiated. If one examines a thick, free hand section of an asbestosis lung that has been properly cleared, it will be noted that there is fibrosis in every portion of the pulmonary framework. The alveolar walls are thick and dense, with an appreciable diminution of the size of the lumens. The pleura and intralobular septums are very thick and encroach on the adjacent air spaces. The trunks are likewise heavy and distorted. In ordinary thin sections, the amount of fibrosis in relation to uninvolved elements is so great that a proper orientation is often impossible. In a preliminary report on the early stages of asbestosis³ produced in animals by a dust composed only of fibers, it was prophesied that bands of contracting fibrous tissue about the respiratory bronchioles might result in atelectasis of the air spaces peripheral to these lesions. Subsequent observations have not substantiated this contention. Evidence now available supports the view that in asbestosis the fibrosis develops irregularly about all points at which the inhaled fibers originally lodged. The lack of participation of the lymphatic system in distributing this dust is indicated by the insignificance of the changes in the tracheobronchial nodes. In certain industries, as already mentioned, there may also be contaminating substances which excite perilymphatic reaction and a limited amount of fibrosis in the mediastinal nodes. In such

1. Gardner, L. U.: *Am. Rev. Tuberc.* 20: 833-875 (Dec.) 1929.

2. Gardner, L. U.: *J. Indust. Hyg.* 14: 18-38 (Jan.) 1932.

3. Gardner, L. U., and Cummings, D. E.: *J. Indust. Hyg.* 13: 65-114 (Feb., March) 1931.

cases no fibers or asbestosis bodies are found in association with the lymphatic system.

Roentgenographically, asbestosis is characterized by a diffuse haziness throughout the lower two thirds of the lung fields, giving the picture a ground glass appearance. Linear markings are much less prominent than normally and no nodular shadows are visible.

A more marked parenchymatous reaction characterizes the picture of silicosis after lymphatic obstruction is well developed. Since the dust can no longer be eliminated by physiologic mechanisms, the phagocytes carry it directly into the delicate framework of the functional portion of the organ. A proliferation of connective tissue ensues, which results in a diffuse interstitial fibrosis complicated by localized nodule formation. The point of origin of these peripheral nodules is not always apparent; frequently they develop about minute collections of lymphoid cells, but it is possible that they may also start at any point in the framework of the lung.

Where the atmospheric concentration of silica is extremely high, and particularly when exceedingly fine particles preponderate, it appears that a so-called acute form of silicosis can develop within a period of from twelve to eighteen months. This is quite within the realm of possibility, for guinea-pigs exposed for eight hours daily to concentrations of 200 million particles per cubic foot of air (light field counts) develop characteristic disease in from ten to twelve months. Man may also react in a similar manner, but each case must be carefully scrutinized to eliminate a previous exposure to siliceous dust and the presence of the complicating factor of tuberculosis. In the sections from eight such cases which have been submitted to me there was evidence of tuberculous involvement in all. However, these were fatal cases; the living can be observed only by roentgenogram. From the character of the microscopic lesions, it would appear that the detection of tuberculosis in conjunction with acute silicosis by roentgenology might not always be a simple matter.

In this acute form of the disease the reaction is primarily parenchymatous. The lesions develop so rapidly in the functional portion of the lung that the preliminary manifestations of perilymphatic fibrosis, beading of the trunks due to small nodules developing about associated lymphoid tissues and the gradual enlargement of the mediastinal lymph nodes are entirely overshadowed. Large parenchymatous nodules and diffuse interstitial fibrosis dominate the picture from its onset.

From this survey of the pathology of pneumonocoinosis it is seen that the reaction to dust may be divided into five general phases: (1) early diffuse parenchymatous disease due to accumulation of phagocytes and local inflammatory changes in the immediately adjacent connective tissues; (2) linear perilymphatic proliferation; (3) beading of the trunks due to chronic proliferative changes in associated lymphoid tissues; (4) enlargement of the mediastinal lymph nodes due to proliferation of the local connective tissues, and (5) late chronic proliferation and nodule formation in the finer connective tissues of the pulmonary parenchyma. Different phases of this picture are accentuated by various types of pure dust. Silica produces all of them, but some dusts are capable of eliciting only a few of the changes. Silica promotes the formation of nodules, both the small variety along the trunks and the larger parenchymatous lesion, but linear accentuation of the trunk marking and diffuse parenchymatous reaction are

also present. Pure fibrous asbestos produces a lesion characterized by a generalized fibrosis involving primarily the finer connective tissues of the pulmonary framework. Silicon carbide in experimental animals⁴ excites a moderate degree of parenchymatous reaction and some linear fibrosis. The other common industrial dusts generally set up a reaction that is characteristically linear, with more or less diffuse changes in the parenchyma but no nodule formation.

These differences in reaction are explained by the localization of the various types of particles effected through the activity of the phagocytes, by the degree of impairment of the lymphatic system, and by the capacity of the various kinds of particles to set up proliferation in the connective tissues.

MIXED DUSTS

A good example of the effect of mixed dusts is presented by the lungs of anthracite coal miners. Their various occupations subject them to the inhalation of coal and silica in different proportions. When the coal dust is adulterated with only a small amount of silica, the reaction resembles that to pure coal. It is predominantly perilymphatic in type, although the connective tissue tends to become more fibrous than that produced by coal alone. If, on the other hand, the miner has worked largely in hard siliceous rock, the picture is that of silicosis with nodular fibrosis, which is more pigmented than in uncomplicated silicosis. The majority of observers have found no support for the Haldane-Mavrogordato hypothesis that coal dust protects against the action of silica.

Another common dust that should probably be classed as mixed is granite. The material from Barre, Vermont, has been most extensively studied. It contains about 35 per cent of free silica as quartz and 60 odd per cent of silicates in the form of feldspar and mica. It has been customary to disregard the latter elements and to take into consideration only its free silica component. In my opinion this view will probably be modified after further study, for there are certain peculiarities about the reaction to this substance which have not received proper emphasis.

The basic study made by the United States Public Health Service of the Barre granite cutters⁵ demonstrated that in roentgenograms nodular lesions did not become manifest until the exposure had been continued for many years and then only when a tuberculous complication had developed. Previous to this event, evidences of disease were confined to an accentuation of the linear markings in the lungs together with an increase in the size and density of the hilar shadow. In the report it was emphasized that in this respect the "silicosis" of granite cutters differed from that produced by other siliceous dusts. Furthermore, it was noted that complicating tuberculosis appeared much later in the disease due to granite dust than in that produced by pure silica.

I collaborated in the Barre study and reported on the pathologic aspects of eight pairs of granite cutters' lungs obtained by the field investigators. All but three of them showed active tuberculosis accompanied by extensive nodular fibrosis. One of the exceptional cases (A-25-25) is of especial significance in this connection. This man had not worked at Barre but in the

4. Gardner, L. U.: *Am. Rev. Tuberc.* 7: 344-357 (July) 1923.

5. Russell, A. E.; Britten, R. H.; Thompson, L. R., and Bloomfield, J. J.: *Pub. Health Bull.* 187, Washington, D. C., Government Printing Office, 1929.

nearly town of Bethel. According to Dale,⁶ Bethel granite is a quartz monzonite in which quartz is more abundant than other constituents, whereas the Barre variety is a biotite granite, in which feldspar predominates. The man in question had cut granite for twenty-eight years, whether by hand or by pneumatic tool is unknown; but presumably he had had a very considerable exposure to dust. He died by drowning while intoxicated. The surface of his lungs was coarsely mottled with black pigment and there were clusters of small, slightly elevated, yellow-white nodules located chiefly in the pleura over the middle and lower parts of both lungs. On section, no nodular lesions could be discovered. The trunks and interlobular septums were unduly prominent and there were ill defined areas of pigmentation without fibrosis scattered here and there through the lung. The tracheobronchial lymph nodes were only slightly increased in size, and they were firm, black in the center and gray at the periphery. Microscopic examination demonstrated that the small pleural nodules were characteristic of silicosis. They varied in composition from cellular connective tissue to hyaline fibrosis. The former type particularly contained great numbers of dust-filled phagocytes. Elsewhere the lung showed not even the earliest stage of a silicotic nodule. There was little dust and no reaction in the lymphoid tissues of the trunks. The major portion of it was collected within collars of cellular connective tissue about the lymphatic trunks in the walls of blood vessels and, to a lesser extent, of the bronchi and in the interlobular septums. In the tracheobronchial lymph nodes there were circumscribed hyaline nodules scattered here and there through the lymphoid tissue. Evidence of tubercle was entirely lacking. In the fat and areolar tissue about the afferent lymph vessels there were large collections of dust-filled phagocytes.

Another man (case 452) died of generalized lymphoblastoma after cutting granite for two and one-half years with a hand pneumatic tool. His lung was extensively involved by tumor and showed no nodular lesions due to dust. The only evidences of pneumoconiosis were perilymphatic accumulations of dust in the lung and pigmented cellular connective tissue in the mediastinal lymph nodes. Traces of tuberculosis were lacking.

A third man (case 522) may be mentioned for contrast. He had worked irregularly in Barre on a surface machine for twenty years. His disease was complicated by tuberculosis but the process appeared to be quite inactive. However, the evidence is incomplete as the upper lobe of one lung had been left in the body because it was so firmly adherent to the chest wall. In the portions submitted for examination, no caseous tubercles could be discovered in the lungs or lymph nodes; calcified nodules, however, were very abundant. In this case small silicotic nodules, not larger than 1 mm. in diameter, were widely distributed throughout all portions of the lungs, with conglomerations of such foci immediately beneath certain portions of the pleura. The trunks and septums were very markedly thickened by collars of pigmented cellular connective tissue, and the lymphoid nodules at points of bifurcation were replaced by hyaline fibrosis.

The first case is of particular significance because the man had been exposed for a long time to a granite of a higher free silica content than the Barre variety and yet he had failed to develop a generalized nodular silicotic reaction. The only pulmonary nodules were

small ones located in the pleura, where the deep and superficial lymphatics join one another. Many of these lesions were composed of cellular connective tissue, which is characteristic of the earlier phases of silicosis. The most striking change was the pigmented cellular connective tissue about lymphatic trunks. In the lymph nodes, in the mediastinum, there were a few typical hyaline silicotic nodules but most of the lymphoid tissue was still intact. The second case showed an early stage of the same type of reaction without the formation of any nodules whatever.

The dominant feature of the pathologic picture in both these cases was not nodular hyaline fibrosis but perilymphatic cellular connective tissue formation. This reaction has been shown to be characteristic of non-siliceous dusts. When tuberculosis came into the picture, both in the probably inactive form exemplified by the last case described and in the active infections observed in the other five cases of the series, nodular lesions were formed without stint throughout all portions of the lung and the picture resembled that seen in typical silicosis.

A suitable pathologic study of human cases of granite pneumoconiosis has not been reported, for autopsy material is limited. However, I have unpublished experimental data which tend to substantiate the conditions found in the human cases just mentioned. In an earlier paper⁷ it was shown that exposures for seven months to heavy concentrations of granite dust would not produce nodular fibrosis in guinea-pigs. With pure quartz² dust, on the other hand, such lesions did develop. The granite produced pigmented cellular connective tissue in the tracheobronchial nodes and along the course of the large lymph vessels within the lungs. If infection with attenuated tubercle bacilli was superimposed, circumscribed areas of cellular fibrosis developed in addition to the typical tuberculous lesions. Further experiments have since been made in which daily exposures were continued for two years to concentrations of over 400 million particles per cubic foot of air (light field counting method). These guinea-pigs likewise failed to develop silicotic nodules, but the linear reaction about the lymphatic vessels was even more marked. There was no attempt to combine these exposures with tuberculous infection. Two animals which survived slightly more than a year after the two years dust exposure had been completed were of particular significance. One of them died of epizootic pneumonia and its companion was then killed. The former, with the infection, exhibited circumscribed nodules of pigmented cellular fibrosis in certain portions of its lungs. The other animal had no evidence of infection and it showed only linear perilymphatic cellular connective tissue increase. In still other experiments¹ to demonstrate the effects of inhaled dust on partially healed primary tuberculous infection, it was shown that 74 per cent of the animals inhaling pure silica reactivated their tuberculosis, while with granite only 26 per cent developed progressive infection. This is also in accord with the clinical experience quoted.

These observations may be evaluated from two points of view. It is generally assumed that only the quartz or free silica content of granite dust is of significance in the production of disease; that the other components act as inert diluents, which reduce the concentration of silica which is inhaled, and that because of such dilution granite pneumoconiosis develops much more

6. Dale, T. N.: Bull. 404, U. S. Geological Survey.

7. Gardner, L. U.: Am. Rev. Tuberc. 4: 734-755 (Dec.) 1920.

slowly than that produced by pure silica. On the other hand, it is equally possible to assume that the non-siliceous components of granite dust may of themselves excite biologic reaction and that possibly they may modify the characteristic effects of pure quartz.

The data just presented indicate that a granite pneumoconiosis does not begin with the formation of nodules in the lymphoid tissues as in ordinary silicosis but that it presents only the characteristic perilymphatic proliferation of the nonsiliceous dusts. The observations in the case of the Bethel granite cutter who had worked as long as twenty-eight years would suggest that in the absence of infection the predominant lesion continues to be of the nonspecific linear type. This contention does not depend solely on the observations in a single autopsy but it is supported by the large group of roentgenologic observations in the Barre study and by experimental disease produced in guinea-pigs. Furthermore, both clinical and experimental evidence suggest that the "silicosis" of the granite workers does not create a condition of increased susceptibility to tuberculosis as quickly as that resulting from disease produced by pure silica.

As a working hypothesis, it is proposed that in the absence of infection the nonsiliceous components of granite dust are largely responsible for the reaction that is produced and that possibly by their presence the free silica is held in check. When tuberculosis or to a lesser extent other infections complicate the picture, the free silica cooperates with the living organisms to produce a nodular type of reaction. Such a concept is not new, for "infective silicosis" has played a prominent part in the speculations of the South African observers.⁸ They and others have recognized that, in combination with tuberculosis, silica produces nodular reaction much more readily than when it is acting alone. Some have even gone so far as to maintain that in all silicosis there is an element of infection; this, however, is not necessarily true, for typical silicotic lesions have been repeatedly produced in uninfected animals of many species.

To prove the proposed hypothesis it will be necessary to study much more autopsy material from granite cutters dying without tuberculosis and to perform experiments in which animals are subjected to the inhalation of quartz dust combined with proper amounts of feldspar and mica. In an attempt to evaluate the effect of small amounts of silica such as has been assumed for granite, an experiment is now in progress in which animals are being exposed to quartz dust for only one hour each day over a period of several years. These observations are presented to suggest that caution should be exercised in drawing inferences as to the reaction to any combination of dusts until they have been intensively studied both individually and in association with one another.

8. Irvine, L. G.; Simson, F. W., and Strachan, A. S.: Silicosis, International Conference at Johannesburg, 1930, Geneva, 1930.

Maxillary Sinusitis.—Rabbits with experimentally produced maxillary sinusitis were successfully treated with an extract of the suprarenal cortex. After three intramuscular injections of the extract, the rabbits showed no evidence of infection of the sinus mucosa on microscopic examination. The extract of the suprarenal cortex produced a consistent decrease in hemoglobin and a change in the alkali reserve.—Wenner, W. F.: Effect of Extract of the Suprarenal Cortex on Maxillary Sinusitis in the Rabbit, *Arch. Otolaryng.* 17:774 (June) 1933.

Clinical Notes, Suggestions and New Instruments

RELIEF OF CARDIAC DYSPNEA BY DRINKER RESPIRATOR

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The chief use of the Drinker respirator in the past has been in the treatment of respiratory weakness or paralysis. It has been employed most often in the treatment of two types of patients: (1) adults and children suffering from respiratory weakness due to anterior poliomyelitis and (2) new-born infants suffering from birth asphyxia.

During the observation of patients in both of these groups, one of us (D. P. M.) has been struck by the apparently beneficial effect of artificial respiration on the circulation. The rate and volume of the pulse of adults has been improved greatly by the treatment, and the cardiac action of new-born infants has been improved and maintained for long periods without spontaneous respiration taking place. Such clinical observations and additional experimental ones on asphyxiated animals have suggested that the respirator might be of some value in the treatment of patients in whom the failure of the circulation is the chief disturbance, especially if it is accompanied by respiratory embarrassment. On the basis of these observations, the patient with cardiac dyspnea whose case is described in this report was subjected to artificial respiration in a Drinker respirator.

REPORT OF CASE

W. P., a Negro man, aged 58, a laborer, admitted to the medical service of Dr. H. W. Schaffer at the Philadelphia General Hospital, April 4, 1933, complained chiefly of (1) shortness of breath, (2) palpitation of the heart and (3) insomnia. His previous hospital record showed that he had been discharged only a few weeks previously with a final diagnosis of aortic regurgitation, myocardial degeneration, hypertension and syphilis. On physical examination, he was found to have slight edema of the extremities but no pleural effusion or other extracardiac mechanical cause for his difficulty in breathing.

April 24, he was unable to lie flat on his back for more than a minute and a half without becoming severely dyspneic. On this day, he was given three and one-half hours of continuous artificial respiration in a Drinker respirator. Throughout the treatment he lay flat on his back and during this time did not experience any dyspnea. At the end of the first twenty minutes of artificial respiration the patient volunteered the information, in a somewhat worried tone of voice, that "his heart had stopped beating." Prior to the start of treatment, palpitation had been continuous.

He continued to feel no cardiac pulsation for a period of approximately two hours after he was removed from the machine. During the treatment he slept for short intervals.

The experiment resulted in what seemed to be two significant observations: 1. The dyspnea disappeared during the treatment, as indicated by the patient's comfort, even though he was lying flat on his back; but it returned again two minutes after the artificial respiration was stopped. 2. The palpitation also disappeared as a result of the treatment but, unlike the dyspnea, was kept in abeyance for a much longer period (two hours) after the treatment was stopped.

The success of the treatment probably depended on a number of factors: 1. The patient was relieved of the work necessary to carry on respiration. 2. The chest was expanded mechanically to a greater degree than spontaneously, and sufficiently to maintain a satisfactory pulmonary aeration. Also, the negative pressure created in the chest probably aided the return flow of blood to the heart.

These observations point to the possible value of the respirator as an emergency measure for the treatment of patients with acute cardiac failure. By placing such patients in a respirator, it might be possible to give them immediate cardiac assistance during their most critical period and before it becomes possible to digitalize or otherwise treat them.

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METASTATIC PANOPHTHALMITIS FOLLOWING
PNEUMOCOCCIC OTITIS MEDIA

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A boy, aged 4 years, who was anemic, was seen in consultation because of difficulty in maintaining drainage from a suppurative right otitis media of four weeks' duration. The drum had been incised at the end of the second week and again at the end of the third week.

At the time that the child was examined, the temperature was 102; the patient was lethargic and irritable. When the drum membrane incision was enlarged there appeared a quantity of thick pus under pressure. At this time it was noted that the left eye was sensitive to light and that the pupil was contracted. No surface lesion could be detected even after staining with fluorescein. A culture taken from the ear revealed the pneumococcus as the offending organism. On the succeeding five days the eye became progressively worse, the cornea became clouded, the globe became inflamed, pus appeared in the anterior chamber, and finally there developed a typical ring abscess of the cornea, and an anterior staphyloma. The right eye remained normal and there were no other metastatic foci. The eye ruptured through the bulging cornea. Culture revealed the pneumococcus as the organism in the secondary lesion. The involved eyeball was sunken and shapeless, and the conjunctival sac was filled with pus. An enucleation was done. The discharge from the ear ceased after ten days, and the patient made a steady gain.

Metastatic ophthalmia develops through septic emboli which become arrested in the vessels of the choroid or retina. The nature of the inflammation set up depends mainly on the organism. Pyogenic organisms cause a purulent inflammation which generally passes into a panophthalmitis. It is these inflammations that constitute metastatic ophthalmia in the narrower sense of the term. Metastatic ophthalmia is produced either by ordinary pyogenic germs, among which the streptococcus ranks first and the pneumococcus second, or by bacteria that are specific for certain definite diseases; e. g., meningococcus, pneumobacillus, influenza, typhoid. The diseases caused by these bacteria, and above all puerperal fever and ordinary pyemia, are the main cause of metastatic ophthalmia. Sometimes, however, as in a slight attack of influenza or a small purulent focus somewhere in the body, the original disease may develop in so mild a form that it is overlooked and the panophthalmitis apparently develops spontaneously. In children, suppuration of the umbilical cord and sometimes vaccination may give rise to metastatic ophthalmia. Von Hippel reported one case caused by gonorrhea.

The bacteria that get into the vitreous grow abundantly in it but do not ordinarily pass into the inner coats of the eye. The purulent inflammation of the latter depends, therefore, on the remote action of the bacteria in the vitreous. The inflammation consequently affects mainly the inner surfaces of these membranes, i. e., the retinal coating of the ciliary body and the retina itself, so that the name endophthalmitis is a proper one for this sort of inflammation. When bacteria are particularly abundant or violent, necrosis of the coats of the eye develops, starting from their inner surfaces. Necrosis of the cornea leads to the entrance into it of leukocytes and to a demarcating inflammation with the clinical picture of a ring abscess. Necrosis of the inner coats of the eye in the posterior segment affects first the retina, then the choroid, and sometimes also the sclera, paving the way for perforation.

The pathologist's report was as follows:

"The collapsed eyeball was partly filled with clotted blood and the cornea replaced by seminecrotic hemorrhagic tissue resembling soft granulation tissue. Microscopically the sections revealed complete destruction of the lens and cornea. These were replaced by a seminecrotic tissue fused with the iris and ciliary body and densely infiltrated with polymorphonuclear leukocytes. Posteriorly, the sclera and choroid displayed perivascular lymphocytic infiltration and hemorrhage. Most of the retina was separated anteriorly and posteriorly and lightly infiltrated with leukocytes. Diagnosis: Acute suppurative panophthalmitis."

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Special Article

MIGRAINE

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Thanks to the financial support of the Josiah Macy, Jr., Foundation, Riley¹ has been enabled to contribute a review of 100 pages covering all important contributions from antiquity to the year 1932. Since then, a valuable article by Critchley and Ferguson² has appeared as the opening paper of a discussion at the Harveian Society of England.

Riley defines migraine as "a periodic incapacitating headache culminating in nausea or vomiting, often preceded by visual disturbances, followed by sleep and occurring against a background of relatively perfect health." Riley makes the reservation that this definition is not an absolute one, since many cases fail to present any one or several of these characteristics.

The history of migraine does not begin with Hippocrates but in the first century of the Christian era with a description of "heterocrania" by Aretaeus of Cappadocia. About fifty years later Galen introduced the term "hemicrania." During the disintegration of Latin in the following centuries the word was corrupted into "hemigranea," "emigranea" and migranea, and finally the French word "migraine" became stabilized.

PERSONAL CLINICAL OBSERVATIONS

I have assembled the available data concerning 270 patients seen in my private practice. There were 75 males and 195 females. Most of them were of adult age, many at middle life or beyond, when first seen. A special effort was made to determine the age at the onset. It was found that in 151 cases (56 per cent) the onset was at or before the age of 16 years. This figure is fairly accurate, but the average age at onset, also computed at 16 years, is only approximate. In the large number of cases in which the patients said they had suffered from headache "as long as they could remember" or "from childhood," the onset was arbitrarily placed at 10 years. Of the women, 65 were single and 130 married or widowed when they were first seen. A history of more or less typical migraine in one or both parents was obtained in 153 cases (57 per cent); namely, in both parents in 12 cases, in the father in 35, and in the mother in 105; of migraine in one or more brothers and sisters in 80 cases (29 per cent), and in a grandparent in 22 cases. This last figure, or 8.1 per cent, is probably many times too small, since very few people know about the headaches of their grandparents and it must be remembered that migraine rarely persists to old age, at which epoch most persons know their grandparents, if at all. Compared with these figures, others relating to near relatives are trifling. Epilepsy was present in both parents and a brother of one patient in whom epilepsy developed, and in the mother of one other patient. Diabetes in a parent existed in four cases; asthma or hay fever or both in one parent of two and in a brother or sister of four patients. Urticaria in a sister was recorded twice.

Clinical lecture, read at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 12, 1933.
1. Riley, H. A.: Bull. Neurol. Inst. New York 2: 429 (Nov.) 1932.
2. Critchley, Macdonald, and Ferguson, F. R.: Lancet 1: 123 (Jan. 21), 182 (Jan. 28) 1933.

The following features in the 270 cases are recorded: The headache was unilateral in fifty-six cases. Eye symptoms included scintillating scotoma in sixteen cases, blurring or "cloud before the eyes" in ten, pain in the eyes in seven, swelling in three, transient hemianopia in three, transient diplopia in two, iritis in two, and marked lacrimation in two. Convulsions occurred in eight patients, unconsciousness without convulsion in one and fainting in two. Vascular disorders were manifested by hypertension in fifteen cases, hypotension in three, cerebral hemorrhage in four, meningeal hemorrhage in four and paroxysmal tachycardia in two. Vertigo was a prominent part of the attacks in thirteen cases. Attacks of edema were recorded in four cases, urticaria in six, asthma and hay fever in only one. Twenty-five patients complained of being "always tired" or having had "nervous prostration." Transient aphasic symptoms, amnesia or confusion existed in five cases. Hyperthyroidism existed in eight cases, hypothyroidism in two.

One surprising difference between the sexes is in their exposure to surgery. Among my seventy-five male patients, two had had the appendix removed and seven the tonsils, while of the 195 women nineteen had had appendectomy and twenty-one tonsillectomy. In addition, nine women had had gallbladder operations and three thyroidectomy, as against none in the men. In fifteen women, one or more ovaries were removed and in nine all or part of the uterus. Five had had operations for fixation of the uterus, four repair of lacerations and four curettement. Two had pelvic operations of unknown nature, and one had had an operation for salpingitis. Against this, the men could show only one operation for undescended testicle and one for hydrocele. The men lead in the percentage of hemorrhoid operations, each group having had three.

This record of operations is probably not complete, as the compilation was an afterthought stimulated by the report of Moehlig,³ whose sixty-nine female patients could boast thirty-two laparotomies, thirteen thyroidectomies, three operations for cystic mastitis and one for carcinoma of the breast. Of the thirty-one males, six had had appendectomy and two thyroidectomy. Buchanan⁴ has reported a larger series in which 75 per cent of the patients had had futile operations.

COMMENT ON MIGRAINE STATISTICS

There is essential agreement on three points: (1) the great frequency of migraine in parents and offspring, (2) the onset in early life and (3) the greater prevalence in women. All agree that at least twice as many women as men consult physicians for migraine. However, the wise Sir William Gowers said: "The preponderance of females has been greatly exaggerated." Recently, Allan,⁵ on the basis of theoretical considerations concerning heredity and a canvass of a group of about 100 married couples, concluded that "the incidence of migraine is the same in men as in women, but, clinically, one sees more women than men with migraine, because the headache is more often severer in women."

Here agreement ends, owing largely to divergence in the interest and point of view of observers and because of lack of a clear-cut distinction between migraine and other forms of headache. In the past, the ophthal-

mologist, the rhinologist, the gynecologist and the man who thought he knew the meaning of "auto-intoxication" each claimed the whole field. Now the endocrinologist, the allergist and the neurosurgeon have replaced the former more simple-minded specialists, and the psychoanalyst is just beginning to look in. My personal hope is that the colloidal chemist also will enter the field and bring in an entirely new point of view.

CLINICAL TYPES

The clinical types are many, run more or less together and depend mainly (1) on the character and distribution of the three cardinal symptoms, headache, nausea and ocular disturbances, and (2) on the presence of sundry superadded features emphasized differently according to the observer's point of view. I shall not spend any time on the variations in character and location of the headache, on a description of the familiar scintillating scotomas, on the well known relation to menstruation in women or on the tendency of the attack to end in sleep. Instead I shall discuss certain associations of migraine, each of which has given rise to special theories of pathogenesis and therapy.

RELATION TO EPILEPSY

Statistics show only a small percentage of cases of epilepsy in the ancestors of migraine patients but a large proportion of migraine in the ancestors of epileptic patients. For instance, epilepsy in a parent was recorded only twice in my 270 migraine cases, while in a similar study of 200 office patients with epilepsy⁶ migraine in a near relative existed in fifty-six cases, or 28 per cent. Twelve of these patients had convulsions following head injury, and the parents of four, possibly five, of these had migraine. Ely⁷ found 71 per cent of migraine heredity in migraine patients, 60 per cent in epileptic patients and 17 per cent in normal controls. On the other hand, epileptic heredity existed in only 5.7 per cent of migraine patients, 14 per cent of epileptic patients and 7 per cent of normal controls. Of his 171 patients with convulsions, 15.2 per cent suffered from migraine and 7.6 per cent of his 104 migraine patients had convulsions. Among my 270 migraine patients, eight had convulsions at times, but with one exception the convulsions were incidental and much less annoying than the headaches.

In his treatise on migraine, Flatau⁸ states that, in thirty-six of his group of 500 migraine patients, convulsions developed. In most of his cases as well as in mine the migraine had appeared in early life and the convulsions much later. I recall one woman who was subject to migraine at her menstrual periods until the menopause, when the headaches ceased and epileptic attacks set in. It is particularly in ophthalmic migraine that convulsions are prone to occur. Phillips,⁹ who wrote an article on epileptic manifestations in migraine, believes that late occurrence of convulsions in such cases is due to cardiovascular changes. He reports cases, one with a necropsy, in support of it and calls attention to the relative frequency of convulsions at the menopause in women subject to migraine from youth. According to his experience, patients with migraine "are much more subject to the development of arterio-

6. Bassoe, Peter: *M. Clin. North America* 7: 519 (Sept.) 1923.

7. Ely, F. A.: *The Migraine-Epilepsy Syndrome*, Arch. Neurol. & Psychiat. 24: 943 (Nov.) 1930.

8. Flatau, E.: *Handb. d. Neurol.* 5: 367, 1914.

9. Phillips, John: *The Relation Between Migraine and Epilepsy*, J. A. M. A. 78: 1960 (June 24) 1922.

3. Moehlig, R. C.: *Endocrinology* 15: 11 (Jan.-Feb.) 1931.

4. Buchanan, J. A.: *Surg., Gynec. & Obst.* 38: 638 (May) 1924.

5. Allan, William: *The Sex Ratio in Migraine*, Arch. Neurol. & Psychiat. 27: 1436 (June) 1932.

sclerosis, high blood pressure and chronic arterial nephritis than are other patients."

RELATION TO CEREBRAL VASCULAR LESIONS

I can subscribe to the statement by Phillips that migraine to some extent predisposes to vascular lesions in the brain, both thrombotic and hemorrhagic. Thus, when after years of intermittent hemianopia in the attacks permanent hemianopia develops, it is reasonable to suppose that thrombosis has taken place. A woman patient of mine subject to migraine from the age of 12 years died of hemorrhage in the internal capsule at the early age of 37. A man with migraine, with no evidence of syphilis, nephritis or heart disease and with normal spinal fluid, had two attacks of transient left hemiplegia at 41. His systolic blood pressure was 140 at the time of the first attack and 100 at the second one. Spontaneous subarachnoid hemorrhage in particular appears to be relatively frequent in migraine victims, even youthful ones. Goldflam,¹⁰ who advocates this view, relates instances of such hemorrhages at the ages of 10 and 20 years and got a history of migraine in five of thirteen cases. Adie¹¹ cites other cases in point, as do recently Critchley and Ferguson.² On the other hand, Ehrenberg¹² encountered migraine in only one of the seventy-two cases which form the basis of his monograph on subarachnoid hemorrhage. It is known that such hemorrhage often occurs in cases of aneurysm of the circle of Willis, from congenital defects in the vessels, and the previous migraine-like headaches in such cases may have been directly due to the aneurysm.

RELATION TO PAROXYSMAL TACHYCARDIA

There are two cases of paroxysmal tachycardia in my series, one in a woman, seen at 48, whose mother had migraine and who had suffered from sick headaches from early youth. The headaches stopped at 43 and were replaced by attacks of tachycardia. Several infected teeth were removed and a few months later she began to suffer from periodic pain in the right side of the face, for which no cause could be found. Cannabis gave no relief, but she improved on phenobarbital. The other patient, a woman, aged 45, gave a history of migraine in both parents, brothers and sisters and many other relatives on both sides. She had always been delicate, exhaustible and given to mental depression. Her headaches had become very frequent but were severe only about twice a month. About twice a year she had attacks of tachycardia with pulse up to 240.

Paroxysmal tachycardia is recognized as a "migranic equivalent" by Critchley and Ferguson.² This relationship was suggested in 1925 by Thomas and Post,¹³ who had found that the heredity factor was that of migraine rather than of tachycardia, that attacks of the two conditions were brought on by the same factors, and that visual and vasomotor prodromes were often present also in the case of tachycardia. Most patients had a previous migraine history, the headaches later being replaced by tachycardia. In earlier discussions of cardiac neuroses expressions of similar views are found. Thus, Hoffman¹⁴ speaks of the frequent association of paroxysmal tachycardia with migraine and epilepsy. Curschmann¹⁵ emphasizes the presence of

typical ophthalmic migraine in five of his patients with angina pectoris vasomotoria (Nothnagel type). Vallery-Radot¹⁶ has observed alternating attacks of migraine and tachycardia in a woman, and both kinds could be aborted by amyl nitrite.

RELATION TO ENDOCRINES AND VEGETATIVE NERVOUS SYSTEM

Endocrines and the vegetative nervous system are considered together to avoid embarrassing dilemmas. In these fields, sweeping claims have been made to the extent that all migraine relates to this or that endocrine or is due to a disorder of the vasomotor nerves. Riley¹ has reviewed these complex problems so thoroughly and so fairly that I shall discuss them only briefly. The hypophysis has been made the basis of both physical and chemical theories. Timme¹⁷ assumes that certain underlying endocrine disturbances give rise to compensatory enlargement of the hypophysis, which in turn leads to headache by distention of the sella, to visual disturbances on account of the proximity to the optic chiasm and nerves and to the ocular nerves within the cavernous sinus. In support of this theory is cited the occasional occurrence of migraine-like attacks in acromegaly and other forms of pituitary tumor, while opponents claim—and rightly—that migrainous symptoms are not frequent enough in known pituitary disease to support this theory. The anatomic evidence appears meager to most of us. The scintillating scotomas and transient hemianopias fit better with what we know of circulatory disturbances in the occipital lobes. The hypophysis being in the median line, this theory does not explain why the pain so often is unilateral. The roentgenologic evidence as to enlarged and also "bridged-in" sellas is not convincing. However, in a recent discussion Timme¹⁸ reiterates his statement that the sella turcica in migraine shows the results of pressure and that the factor of inheritance is in the size and type of the sella. In proof of his theory he cites with satisfaction a case reported by Pitfield:¹⁹ A young man, subject to excruciating bitemporal headaches, suddenly experienced instant relief while in an unusually severe attack which had driven him to a hospital. A roentgenogram showed a fracture of the posterior clinoid processes, which had released the gland and thus relieved the pain. The trouble with this case is that from the brief description it looks more like a case of pituitary tumor than of migraine.^{19a} Recently Thomson,²⁰ who reports sella changes in seventeen of twenty-five cases of "menstrual migraine," has reported therapeutic successes with injection of theelin three times a day for a week before the expected period. Similar good results with the placental hormone emmenin (Collip) are reported by Blakie and Hossack.²¹ Riley, Brickner and Kurznok²² recently reported on investigations still in progress in New York to determine the amounts of prolan (pituitary gonad-stimulating hormone) and theelin (produced by the ovary) in the urine of migraine patients, eleven females and two

16. Vallery-Radot, Pasteur. Rev. neurol. 1: 895 (June) 1925.

17. Timme, Walter. Brit. M. J. 2: 197 (July 31) 1926; Lectures on Endocrinology, ed. 2, New York, Paul B. Hoeber, Inc., 1932, p. 124.

18. Timme, Walter. J. Nerv. & Ment. Dis. 77: 520 (May) 1933.

19. Pitfield, R. L.: Spontaneous Fracture of the Posterior Clinoids, J. A. M. A. 90: 457 (Feb. 11) 1928.

19a. In a personal communication, Dr. Pitfield informed me that he lost contact with this patient at the time of the first report.

20. Thomson, A. P.: Lancet 2: 229 (July 30) 1932.

21. Blakie, N. H., and Hossack, J. C.: Canad. M. A. J. 27: 45 (July) 1932.

22. Riley, H. A.; Brickner, R. M., and Kurznok, Raphael, J. Nerv. & Ment. Dis. 77: 516 (May) 1933 (more complete in Bull. Neur. Instit. New York, 1933).

10. Goldflam, S.: Deutsche Ztschr. f. Nerven. 76: 158, 1923.

11. Adie, W. J.: Lancet 2: 237 (Aug. 2) 1930.

12. Ehrenberg, Lennart: Spontan Subarachnoidalblödning, Uppsala, Almqvist & Wiksells, 1924.

13. Thomas, W. A., and Post, W. E.: Paroxysmal Tachycardia and Migraine, J. A. M. A. 84: 569 (Feb. 21) 1925.

14. Hoffman, August: Deutsche Ztschr. f. Nerven. 35: 200, 1910.

15. Curschmann, Hans: Deutsche Ztschr. f. Nerven. 35: 211, 1910.

males, and their relation to the attacks. The amount of theelin excreted was generally below the normal level but without relation to the attacks. On the other hand, prolan generally appeared in the urine a few days before the onset and disappeared at or soon after the onset. It also appeared regularly in one of the males, irregularly in the other. (According to Zondek, prolan does not normally occur in the urine of males.) In two patients with prolonged headache, "status hemi-cranicus," the excretion of prolan was practically continuous. Migraine attacks of usual type were induced in seven of nine female patients in from four to twelve hours after the injection of 2 cc. of "follutein" (a pituitary preparation containing the sex hormone prolan, injection of which otherwise rarely produces headache). The authors point out that theelin is normally found in the urine throughout the menstrual life of a woman, while prolan is taken up by the ovaries. It appears in the urine after cessation of ovarian function, as after spontaneous or artificial menopause and during pregnancy. The presence of prolan preceding an attack of migraine therefore would indicate either pituitary hyperfunction or ovarian hypofunction, in either case offering an actual demonstration of an endocrine disorder connected with migraine. Incidentally, the sella turcica was normal in all these cases.

It is a fact that migraine attacks usually are less frequent during pregnancy. Since prolan is found in the urine during pregnancy and since follutein, which contains prolan, produces attacks of headaches in migrainous subjects, one is confronted with an apparent contradiction. However, it has recently been suggested that the anterior pituitary lobe contains no gonad-stimulating hormone during pregnancy and that the "prolan" found during pregnancy is produced by the chorionic epithelium. The success of the British authors with theelin and emmenin is explainable by the known fact that the presence of these hormones in the blood inhibits the formation of pituitary prolan.

A largely thyroid etiology suggested in 1899 by Hertoghe²³ has been advocated by Lévi²⁴ of Paris in numerous articles appearing from 1905 to 1925. He admits that his data appear paradoxical, for while he never found migraine combined with myxedema but often with clinical hyperthyroidism, yet thyroid medication is, according to him, the best treatment. He believes that victims of migraine, asthma, urticaria and "neuroarthritis" are essentially hypothyroid but with episodes of reactive hyperthyroidism. Later, however, Lévi²⁵ is found sponsoring a "hepatohypophyseal" migraine as well. In this country the thyroid factor has been stressed by Moehlig,³ who himself, however, pointed out that his material comes from a goiter belt (Detroit). Both high and low basal metabolic rates were observed, and the best therapeutic results were from thyroidectomy and thyroid feeding in the respective conditions. On the other hand, in an address on migraine, the Danish neurologist Christiansen²⁶ said that he had never seen any benefit from thyroid therapy in migraine even in the presence of thyroid disease, nor, furthermore, from any kind of organotherapy in migraine.

Whatever background endocrine disorders may offer, it is reasonable to suppose that the sympathetic nervous

system is directly concerned in the production of the main symptoms of migraine. This is rendered more plausible by the recent demonstration of nerve fibers in cerebral vessels by Penfield, Hassin and others. Either vascular spasm with ischemia or vasodilatation with hyperemia will explain unilateral headache, scotomas, vertigo, transient numbness, aphasia, paralysis and convulsions.

ALLERGY AND MIGRAINE

The claims of allergists are gradually rising. In 1927, Vaughan²⁷ found definite evidence of allergy in twelve of thirty-three cases (36.4 per cent). In 1930, Balyeat and Brittain²⁸ found a family history of allergy in 85.4 per cent of fifty-five cases. Over half of their patients had "from 85 to 100 per cent freedom from symptoms," and only five patients had less than 40 per cent relief after treatment. Rowe²⁹ wrote in 1928 that food allergy must be considered as a possible cause in all cases of migraine. During the preceding two years he had observed thirty cases which yielded to treatment based on food allergy. The latter was determined by the history of food disagreements, skin tests and "elimination diets." One reason why physicians hesitate to accept food allergy as the main cause of migraine, according to him, is "the fact that skin reactions to foods are often absent or difficult to interpret, the sensitization being localized in the cerebral tissues rather than in the skin." Critchley and Ferguson³⁰ think that the case for the allergic nature of migraine has been overstated, and Riley³¹ says that "conservative opinion must hold that its substantial proofs are yet too few and inconclusive to warrant more than encouragement in the energetic pursuit of a greater volume of well established facts."

THE SPINAL FLUID IN MIGRAINE

Considerable theoretical and practical interest attaches to the pressure condition of the fluid. Kennedy³² suggests that edema of the cerebral meninges produces the localized headache and the local cerebral symptoms of migraine and that such edema may be caused by intoxication by foreign protein or from the gastro-intestinal tract. Critchley and Ferguson³⁰ state: "We know that the cerebrospinal fluid pressure is reduced, the composition of the fluid being normal," but do not give the source of this knowledge. The only pressure readings cited by Riley are those of Kerppola,³³ who performed punctures in five cases during attacks, with readings of 80, 110, 120, 190 and 220 mm., respectively. Quincke in three cases obtained pressure readings during attacks ranging from 155 to 210 mm. and noted relief after the punctures. Like these observers, Sicard³⁴ found the fluid normal except for frequent increase in pressure. Claude³⁵ also has observed increased pressure in "simple" migraine. Mingazzini³⁶ mentions increased secretion of cerebrospinal fluid and recovery following lumbar puncture. In a later report he³⁷ relates the

27. Vaughan, W. T.: Allergic Migraine, *J. A. M. A.* **88**: 1383 (April 30) 1927.

28. Balyeat, R. M., and Brittain, Fannie Lou: *Am. J. M. Sc.* **180**: 212 (Aug.) 1930.

29. Rowe, A. H.: Food Allergy, *J. A. M. A.* **91**: 1623 (Nov. 24) 1928.

30. Critchley, Macdonald, and Ferguson, F. R.: *Lancet* **1**: 125 (Jan. 21) 1933.

31. Riley, H. A.: *Bull. Neurol. Inst. New York* **2**: 475 (Nov.) 1932.

32. Kennedy, Foster: *Internat. Clin.* **3**: 200 (Sept.) 1931.

33. Kerppola, W.: *Monatschr. f. Psychiat. u. Neurol.* **51**: 83, 1926.

34. Sicard, J. A.: *Bull. et mém. Soc. méd. d. hôp. de Paris* **29**: 1142 (June 6) 1913.

35. Claude, H.: *Rev. neurol.* **1**: 837, 1914.

36. Mingazzini, G.: *Policlinico* **21**: 3 (Jan. 4) 1914.

37. Mingazzini, G.: *Policlinico* **24**: 269 (July) 1917.

23. Hertoghe: *Nouv. iconog. de la Salpêtrière*, 1899.

24. Lévi, Léopold: *Rev. neurol.* **1**: 936 (June) 1925.

25. Lévi, Léopold: *Bull. et mém. Soc. méd. d. hôp. de Paris* no. 17, p. 474, 1926.

26. Christiansen, Viggo: *Rev. neurol.* **1**: 854 (June) 1925.

results of therapeutic puncture in forty-seven cases of what he calls "essential headache," mostly in women and beginning at puberty, intermittent at first and later becoming more and more constant but with exacerbations attended by vomiting and eye symptoms, so it would be classed as migraine. The pressure was always increased. There was temporary aggravation after the puncture, followed later by cure or great improvement in all cases except eight, which remained unchanged.

"ABDOMINAL MIGRAINE"

Like convulsions, so paroxysms of abdominal pain may be substituted for those of headache. After becoming familiar with such "abdominal migraine" while visiting clinics in Berlin, Brams³⁸ rendered useful service by calling attention to this condition, for which many futile laparotomies have been performed. To the twenty-two cases in his first paper, ten were added in a subsequent one by Blitzsten and Brams.³⁹ Corroboration was given in papers by Woltman⁴⁰ and Buchanan.⁴¹ In my series are two cases of this kind, both in women with a strong family history of migraine and urticaria. Both patients began having sick headaches in late childhood and also attacks of abdominal pain, which led to futile search for gallstones in the one at 20, and in the other at 32. The former patient had five additional laparotomies, yet continued to have headaches and occasionally urticaria. The second patient also had attacks of iritis and pseudo-angina pectoris and continued with the headaches, from which she finally got great relief after a course of intravenous injections of sodium thiosulphate.

PSYCHIC EQUIVALENTS

One of the similarities of epilepsy and migraine is that the usual attack may be replaced by some happening in the mental sphere, in both cases most frequently in the form of a "twilight state." These manifestations are thoroughly discussed by Moersch,⁴² who found mental symptoms in 150 of 1,000 cases seen at the Mayo Clinic. In twenty-two cases they were pronounced. Moersch divides them into four groups: (1) those occurring during the prodromal period, (2) those occurring during the attack of headache, (3) those occurring as equivalents replacing the headache, and (4) those occurring as associated phenomena.

A girl, aged 14 years, subject to headaches at her periods, was seen by me in 1928 on account of various psychic episodes, in which she was partly dazed, sometimes exhibiting temper tantrums; once she got lost on the street near home, and once she stepped into a neighbor's garden and picked flowers. In 1931, she was reported as having a severe manic outbreak for twelve days, and there have been no severe attacks since that time.

OPHTHALMOPLLEGIC MIGRAINE

While "ophthalmic" or "ocular" migraine with its scotomas and other sensory eye phenomena is one of the commonest types, I hesitate to include cases in which paralysis of ocular muscles occurs. It is nearly always the muscles supplied by the oculomotor nerve that are involved; the disorder was first described as "recurrent oculomotor paralysis." When, as often happens, the paralysis begins to complicate ordinary

migraine attacks of many years' standing, but without any paralysis existing in the intervals, one naturally looks for a common cause for the sensory and motor symptoms. If the vasomotor theory of migraine is accepted, one may approve of the explanation offered by Ehlers⁴³ for the occurrence of transient oculomotor paralysis at the end of headaches attended by scintillating scotoma and hemianopia. The last two symptoms may be caused by spasm of the posterior cerebral artery and resulting ischemia of the calcarine cortex. Subsequent vasomotor paralysis and dilatation of the artery may lead to pressure on the oculomotor nerve, which lies close to this artery in the interpuncular fossa. However, Ehlers himself gives warning against accepting such an explanation for all cases and to be particularly suspicious of permanent organic changes when the abducens nerve is involved or when the oculomotor paralysis is of nuclear type. A huge literature concerning this disorder has sprung up, and there have been several cases in which small tumors or other gross lesions have been found. Hence, I hesitate to include this whole group in ordinary migraine but would accept cases in which, after years of observation, the symptoms remain explainable by the hypothesis of Ehlers. A similar suggestion as to the importance of the proximity of the third cranial nerve to vessels in the production of this syndrome was made earlier by Shinoya,⁴⁴ who reported a case with necropsy in which a gross lesion was found.

THE THERAPEUTIC PROBLEM

Among chronic ailments, migraine ranks high as a cause of loss of time and of broken engagements for work or pleasure. On the other hand, it does not figure as a cause of death. Unless one is unreasonably exacting in the diagnostic criteria, it is about the commonest "disease" of civilized peoples. There are few reliable data concerning its actual frequency. Among 15,000 patients seen in private practice, Grimes⁴⁵ found 1,200 cases of migraine. There are all gradations, from severe and disabling to most trifling forms, and it is not possible to be logical without including the latter, which enormously swells the number of cases. It is safe to say that much less than half of all migraine victims ever consult a physician for it. Crile's conception of exophthalmic goiter and gastric ulcer as diseases of civilization may well be applied to migraine. The attacks may be considered nature's protest against the speed with which in the last few hundred generations readjustments have had to be made to give right of way to the forebrain. Some of the lower mechanisms fail to keep up, and a halt must be called at times. Viewed in this way, migraine is protective and a warning to the individual that there is something wrong with his hygiene. He may not be fitted for his work or the climate in which he finds himself, or his habits may need regulation. As a matter of fact, many victims of migraine are greatly helped by a change in occupation or certain habits, especially as regards food, exercise and sleep.

Petersen,⁴⁶ who has made an extensive study of the relation of disease to atmospheric conditions, says:

The migraine patient is usually leptosome and poorly buffered. The acute precipitation of the attacks usually occurs

38. Brams, W. A.: *Abdominal Migraine*, J. A. M. A. 78: 26 (Jan. 7) 1922.

39. Blitzsten, N. L., and Brams, W. L.: *Migraine with Abdominal Equivalent*, J. A. M. A. 86: 675 (March 6) 1926.

40. Woltman, H. W.: *Minnesota Med.* 7: 193 (March) 1924.

41. Buchanan, J. A.: *Boston M. & S. J.* 192: 667 (April 2) 1925.

42. Moersch, F. P.: *Am. J. Psychiat.* 3: 697 (April) 1924.

43. Ehlers, H.: *Acta psychiat. et neurol.* 3: 219, 1928.

44. Shinoya, F.: *Deutsche Ztschr. f. Nervenhe.* 42: 155, 1911.

45. Grimes, Eli: *M. J. & Rec.* 134: 417 (Nov. 4) 1931.

46. Petersen, W. F.: *Proc. Inst. Med. Chicago* 9: 234 (Jan. 15) 1933.

with a relative alkalosis, due to a sudden fall in the CO_2 content of the serum. The most frequent direct cause of this alteration is a sudden change in the barometric pressure from high to low. Later a distinct anoxemia follows and the development of a relative acidosis, which in turn may reach a maximum with the sudden upturn of the barometric pressure from low to high. The difficulty in therapy lies in the fact that any one or all of these factors may be involved in the mechanism of the headache. Improvement usually follows stabilization of the patient, i. e., by a change in the cell membrane status, in the buffer system, or a change in the environmental factor that may be at fault. Many other factors, such as fatigue, diet, infection and intoxication, and sensitization, are frequently inciting agents but the governing mechanism that must always be considered is the gaseous exchange as it affects individuals of different constitutional lability.

METHODS OF TREATMENT

1. *Hygienic.*—Most migraine patients would be reasonably comfortable if they could and would correct obviously erroneous modes of living and undesirable environmental factors. I have seen almost complete relief by stopping overeating or excessive water drinking, by drinking a glass of cream between meals in the case of persons working long hours, by the institution of regular and abundant outdoor exercise, the regulation of the diet along various lines and the overcoming of constipation.

2. *Correction of Demonstrable Anomalies or Disease Conditions.*—The constitutional lability of migraine victims enhances the importance of factors that would not disturb normal persons. Importance therefore attaches to small errors of refraction, to even minor evidences of allergy or of endocrine disorders. In the so-called bilious and abdominal types, the gastro-intestinal tract should receive scrupulous attention.

3. *Medicinal Treatment for Migraine Per Se.*—There are many drugs which, given regularly for months or years, have done well in a small proportion of cases and failed in a larger proportion. Bromides, phenobarbital, calcium salts and cannabis deserve particular mention. I have given fluidextract of cannabis in the largest dosage tolerated—and this is extremely variable—to dozens of patients with a few successes but can report many more utter failures. In the last two years I have been surprised by comparatively good results from intravenous injections of 1 Gm. doses of sodium thiosulphate (hyposulphite). I was told of this by Dr. R. E. Johannesen of our medical department. Dr. Loren Avery in our neurologic clinic noted the cessation of headache in some patients who had been given the thiosulphate on account of arsphenamine intoxication. I am not sufficiently familiar with the pharmacology of hyposulphites to offer an explanation for this favorable action. A report by Kabelik⁴⁷ is perhaps suggestive. This investigator injected sodium thiosulphate into horses and found the serum from these horses was less likely to cause anaphylactic reactions in guinea-pigs. He found that phagocytosis was increased 100 per cent and believes that this drug increases the production of the (hypothetic) reticulo-endothelial hormone "reticulín."^{47a}

For the relief of the attacks, nearly every patient has his pet remedy. I have seen several cases of chronic acetanilid poisoning and a few of morphine addiction from the injudicious use of drugs.

SURGICAL TREATMENT

Three operative methods have been suggested as a last resort in severe cases.

1. *Subtemporal Decompression.*—Harvey Cushing⁴⁸ wrote in 1910:

One by-product of the decompression idea which has aroused our interest has grown out of the striking relief from the intracranial discomforts experienced by patients with tumor, through the establishment of a subtemporal defect in bone and dura. This matter concerns those unfortunates who are constant sufferers from intractable migraine. There are many types, of course, of hemispheric and many causes for it but in one familiar group there occurs during the attack a marked arterial dilation of the temporal vessels accompanied by a venous congestion which is seen best in the external branches of the ophthalmic vein, but which is observable too by the ophthalmoscope in the eyegrounds. Ptosis, pupillary inequality, vomiting, slow pulse and other familiar symptoms, associated at times with a low grade of choked disk, accompany the attacks, and a number of these individuals have submitted with eager willingness to the experiment of a subtemporal decompression, which has resulted in a considerable measure of relief in most instances. What encourages us to believe that the step is in the right direction is the fact that when subsequent headaches occur there is evidence of increased tension shown by a tendency to protrusion at the seat of the defect, which becomes flat again, or even recedes, with the free interval. The seizure would seem to be brought about by some local nerve discharge acting on the blood vessels and causing pressure from a circumscribed edema, possibly of the nature of an angioneurotic edema. Nevertheless it must be admitted that the matter demands much longer study before it can be advocated on a sound basis of therapy.

Critchley and Ferguson⁴⁹ have recently written: "For the very severe cases which do not respond to any of the above measures we would recommend a right subtemporal decompression. Gordon Holmes says that he has never known migraine to persist in a patient who has had a surgical or traumatic decompression."

2. *Operations on the Sympathetic.*—It is needless to say that Jonnesco and Leriche have removed cervical ganglions for migraine and reported success. Hellwig⁵⁰ suggested periarterial sympathectomy on the common and internal carotid arteries. In this country, Dandy⁵¹ reported relief in two men with unilateral headache by removal of the inferior cervical and first thoracic ganglions.

3. *Ligation of the Middle Meningeal Artery.*—Dickerson⁵² has ligated the middle meningeal artery in severe cases of unilateral migraine. In two patients the ligation was done because of head injury; it was afterward found that the patients had been sufferers from migraine. It did not recur after operation. In one case the procedure was part of an exploratory operation, and in the other four it was deliberately planned for the relief of migraine. Dr. Dickerson⁵³ has since informed me that these patients have remained free from headache with two exceptions. In one patient, in whom probably only the posterior branch of the artery was ligated, there have been a few light attacks, and one, who proved to be a narcotic addict, again complained some of pain after seven months, which very well may have been due to craving for

48. Cushing, Harvey: *Cleveland M. J.* 9: 827 (Nov.) 1910.

49. Critchley, Macdonald, and Ferguson, F. R.: *Lancet* 1: 187 (Jan. 28) 1933.

50. Hellwig, Alexander: *Arch. f. klin. Chir.* 128: 261, 1924.

51. Dandy, W. E.: *Bull. Johns Hopkins Hosp.* 48: 357 (June) 1931.

52. Dickerson, D. G.: *J. Nerv. & Ment. Dis.* 77: 42 (Jan.) 1933.

53. Dickerson, D. G.: Personal communication to the author, April 28, 1933.

47. Kabelik, J.: *Compt. rend. Soc. de biol.* 110: 397 (June 10) 1932.
47a. Just after this was written, an interesting report was made by L. A. Crandall and G. M. Roberts (*Illinois M. J.* 63: 512 [June] 1933) on the treatment of periodic headache with chondroitinsulphuric acid by mouth.

drugs. Craig⁵⁴ reports a case of relief from a steady unilateral frontotemporal headache by ligation of this artery, the anterior branch of which was found embedded in the inner table of the skull.

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Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING AMENDMENT OF ITS RULES AND REGULATIONS.

RAYMOND HERTWIG, Secretary.

RULE GOVERNING ADVERTISING TO PHYSICIANS

The section "Rules Governing Package Label and Advertising," page 10 of the Rules and Regulations (February, 1933), has been amended by addition of the following paragraph:

Advertising intended solely for the physician may include disease names and information supported by sufficient evidence regarding the special use of foods in the diet of the sick. Such advertising, however, shall not treat foods as medicines or attempt to transform foods into therapeutic agents. Food advertising shall consider foods solely for providing nourishment for the well and for the sick or for preventing or correcting nutritional disorders. Products treated as therapeutic agents come within the purview of the Council on Pharmacy and Chemistry.

REPORTS OF THE COMMITTEE

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

PURITY BRAND FREE RUNNING TABLE SALT (ADDED CALCIUM CARBONATE)

Manufacturer.—International Salt Company, New York.

Description.—Table Salt containing 1 per cent added calcium carbonate, which tends to preserve its "free running quality." The same as International Free Running Salt (THE JOURNAL, July 2, 1932, p. 34).

LARSEN'S CARROTS (STRAINED-UNSEASONED)

Manufacturer.—The Larsen Company, Green Bay, Wis.

Description.—Sieved carrots prepared by efficient methods for retention in high degree of the natural mineral and vitamin values of the raw carrots. No added sugar or salt.

Manufacture.—Freshly harvested carrots are sorted, washed, peeled, inspected to remove any undesirable material, steamed until soft, puréed as described for tomatoes (THE JOURNAL, July 1, 1933, p. 35), admixed with a small quantity of water to produce the desired consistency, heated to 82 C. in a closed vessel and automatically filled into washed cans, which are sealed and processed for sixty minutes at 116 C.

Analysis (submitted by manufacturer).—

	per cent
Moisture	92.6
Total solids	7.4
Ash	0.4
Salt (NaCl)	0.08
Fat (ether extract)	0.2
Protein (N X 6.25)	0.6
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	5.6

Calories.—0.3 per gram; 9 per ounce.

Vitamins and Claims of Manufacturer.—See Larsen's Strained Tomatoes Unseasoned—Ready for Use (THE JOURNAL, July 1, 1933, p. 35).

MARY LOU FLOUR (BLEACHED)

Manufacturer.—The Robinson Milling Company, Salina, Kan.

Description.—A hard winter wheat "straight" flour; bleached.

Manufacture.—Selected hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-seventh ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (one-half ounce per 196 pounds).

Claims of Manufacturer.—For bread baking.

GERBER'S STRAINED TOMATOES

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Sieved, cooked tomatoes retaining in high degree the natural vitamin and mineral values of the tomatoes; the skins and seeds are removed by straining. No added seasoning or other ingredients.

Manufacture.—Especially prepared canned tomatoes are strained, canned and processed as described for Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

Analysis (submitted by manufacturer).—

	per cent
Moisture	85.8
Total solids	14.2
Ash	1.0
Fat (ether extract)	0.2
Protein (N X 6.25)	2.5
Reducing sugars before inversion (as invert)	7.5
Sucrose (copper reduction method)	0.6
Starch (acid hydrolysis method)	0.3
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	9.9

Calories.—0.5 per gram; 14 per ounce.

Vitamins, Minerals and Claims of Manufacturer.—See Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

CLAPP'S ORIGINAL PUREE OF CARROTS (ADDED SALT)

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Strained, cooked carrots; a small amount of salt is added. The method of preparation is efficient for retention in high degree of the natural vitamins and minerals.

Manufacture.—Purchased canned carrots are strained in an atmosphere of water vapor and subsequently treated as described for Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

The purchased canned carrots are prepared from selected varieties; they are blanched in hot water, machine peeled, inspected to remove unsuitable material, diced and packed into cans, which are filled with salt solution. The cans pass through an exhaustor to remove absorbed air, sealed, processed under pressure and immediately cooled.

Analysis (submitted by manufacturer).—

	per cent
Moisture	94.6
Total solids	5.4
Ash	0.7
Salt (NaCl)	0.3
Fat (ether extract)	0.1
Protein (N X 6.25)	0.4
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	3.8

Calories.—0.2 per gram; 6 per ounce.

Vitamins and Claims of Manufacturer.—See Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

ROBIN'S BEST FLOUR (SELF-RISING) (BLEACHED)

BETTY JANE SELF-RISING FLOUR (BLEACHED)

Manufacturer.—The Robinson Milling Company, Salina, Kan.

Description.—Self-rising flours prepared from a hard wheat "standard patent" flour, calcium acid phosphate, salt and baking soda; bleached.

Manufacture.—The ingredients are mixed in a batch mixer and automatically packed in bags.

Claims of Manufacturer.—For cake, biscuit and pastry baking in the home.

54. Craig, W. M.: Localized Headache Associated with Lesion of Meningeal Vessels, J. A. M. A. 100:816 (March 18) 1933.

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SATURDAY, AUGUST 19, 1933

DIET IN RELATION TO GOITER

When the constant presence of iodine in the normal thyroid gland was described by Baumann thirty-seven years ago, a new chapter was opened in the study of physiologic function. The interest in the discovery was greatly enhanced by the subsequent appreciation of a close relationship between the distribution of endemic goiter and the availability of iodine in the food and water supplies of definite areas. The results belong, of course, among the classic contributions to the medical sciences. It must not be assumed, however, that this chapter of knowledge has become a closed book. The indispensability of iodine for normal bodily function is, indeed, beyond debate. Strange as it may seem, however, the quantitative extent of man's requirement of the element is not as yet well determined.

According to recent figures,¹ the iodine content of human thyroid ranges in adults from 2.4 to 23.7 mg., with an average of 8 mg. Defective glands are much poorer in iodine. What intake of the element is requisite to maintain a physiologically satisfactory content in the glands? This is, of course, a fundamentally important question. The quantities are so small, and the variability of the natural sources of iodine in the dietary regimen is so wide, that the question of requirement cannot readily be answered. According to the elucidating investigations of the South Carolina Food Research Commission,² views as to human iodine requirements have up to this time been based almost entirely on analysis of diets in goitrous and nongoitrous regions, or on the iodine elimination of individuals in such regions. Summarizing such available information, Cameron states that the minimum quantity of iodine required has been estimated to amount only to between 35 and 70 gammas daily, while Orr and Leitch state that the minimum daily requirement may be about 45 gammas for an adult male and 150 gammas for a

child. A gamma is 0.000001 Gm., a grain being 0.064 Gm., or 64,000 gammas. An elaborate study of the iodine requirement of the most extensively investigated laboratory species, the albino rat, has led the South Carolina investigators² to suggest that from 20 to 40 gammas per thousand calories of the ration be considered as the minimum iodine need. The figures were secured by feeding diets to which different amounts of iodine (as KI) were added. Using as a criterion the smallest amount of iodine necessary to prevent any significant thyroid enlargement, they found that the minimum iodine requirement was approximately from 1 to 2 gammas per rat daily. This intake of iodine yielded a concentration of from 0.11 to 0.18 per cent of iodine (dry basis) in the thyroid. On a basis of comparison with the regular calory intake of the species, the minimum iodine requirement of the human being was calculated to be approximately from 60 to 120 gammas daily.

Goiter is directly related to the problem of iodine intake. According to Marine it is a compensatory or work hypertrophy of the thyroid depending on a relative or absolute deficiency of iodine. This deficiency of iodine may be due to: (1) factors that bring about an abnormally low intake of iodine; (2) factors that interfere with the absorption or utilization of an otherwise adequate intake; (3) factors that increase the needs of the body for the iodine-containing hormone. Perhaps the iodine supply is the most important feature of the goitrogenic diet.

THE PHYSICIAN AND THE NATIONAL RECOVERY ADMINISTRATION

The legislation enacted to raise the country out of the present depression has given rise to many difficult questions, and the pressure under which that legislation is being made effective renders it difficult at times to obtain authoritative answers. Interpretations and proposals put forth from private sources, too, only add to the confusion. The result is that many physicians are in a state of doubt and hesitation. THE JOURNAL is in receipt of many inquiries from physicians and hospitals with requests for advice.

It has been definitely settled that physicians, in the discharge of their professional duties, are not within the terms of the National Industrial Recovery Act. A physician may work as many hours as he finds expedient and for as small compensation as he is willing to accept, and he will violate no law and no federal policy.

THE JOURNAL last week said: "However, if a physician employs more than two persons as attendants in his office, of the class of clerical employees, accountants, laborers and similar types of help, they do come under the National Recovery Act with a minimum wage and certain maximum hours of work." Because

1. White House Conference on Child Health and Protection: Part III. Nutrition, New York, Century Company, 1932.

2. Levine, H.: Remington, R., and von Kolnitz, H.: Studies on the Relation of the Diet to Goiter: I, J. Nutrition 6: 325 (July) 1933; II, *ibid.*, p. 347.

of many rulings reported from various parts of the country that were inconsistent with this statement, a ruling was requested from General Thomas S. Hammond, executive director of the President's reemployment program. The policy stated in *THE JOURNAL*, said General Hammond, concerning physicians as employers of certain types of help, is sound and has his approval. Rulings from other sources may be disregarded.

Many physicians have manifested concern because a proposed code of fair practice for the retail drug trade, prepared and published by the National Association of Retail Druggists, contained provisions from which it might be inferred that physicians would be required to purchase medicinal preparations, drugs, pharmaceuticals and chemicals, applicable to the outside or inside of the human body, from retail druggists and to pay retail prices, and that physicians would not be permitted to distribute drugs and medicines to their patients and to receive pay for them. The draft of the proposed code seemed to be designed, too, to prevent hospitals from maintaining drug rooms for the compounding and dispensing of drugs necessary in the operation of the hospital, unless such drug rooms were under the supervision of registered pharmacists or licensed physicians at all times when in operation. In a later draft of this proposed retail drug trade code, these objectionable provisions have been eliminated.

While the draft of a proposed code published by the National Association of Drug Clerks contains the same objectionable provision looking toward the closing of the drug rooms in all hospitals and dispensaries throughout the country, when such drug rooms are not, when in operation, under the constant supervision of registered pharmacists or licensed physicians, it seems hardly likely that this proposal will carry much weight in view of the fact that the National Association of Retail Druggists has eliminated an analogous provision from its draft of a proposed code. The code proposed by the National Association of Drug Clerks, however, is worthy of commendation because there is incorporated in it a specific provision that "in view of the fact that the professional training of a pharmacist does not qualify him to intelligently diagnose and treat diseases, proprietors or employees shall decline to give medical advice and refer the general public seeking such advice to a regular practicing physician." This code properly proposes, too, that "proprietors and employees shall at all times uphold the professional reputation of physicians, in return expecting the same consideration from the medical profession."

In considering the present activities of the government under the National Industrial Recovery Act, it must be borne in mind that they will admittedly lead to increased prices, even if that is not their avowed purpose. In trades and industries, it may be economically sound to increase prices. It can hardly be regarded as

economically sound, however, to increase the cost of medical and hospital services to those who are sick and injured and to women during confinement, and thus to add to their burdens. Undoubtedly this aspect of the matter will be taken into consideration by the National Recovery Administration in its endeavors to apply the act to the medical profession and to related activities. The American Medical Association, however, will keep in touch with the situation, to see that the public health is not jeopardized by any decision affecting adversely the interests of those in need of medical services.

ROCKY MOUNTAIN SPOTTED FEVER

Rocky Mountain spotted fever can no longer be regarded a disease restricted to the Rocky Mountain region. "Spotted fever" is now reported beyond the boundaries in which the common vector of the disease, the wood tick, is found. Recent studies¹ show that the disease is prevalent in the eastern and southeastern parts of the United States where typhus, with which Rocky Mountain spotted fever is sometimes confused, is endemic. Rumreich, Dyer and Badger have also established the fact that the dog tick (*Dermacentor variabilis*) is the vector of the disease in these areas. This tick is found in eastern and midwestern states and on the west coast and to some extent overlaps the distribution of *Dermacentor andersoni*. In these areas, sporadic cases of typhus already have been reported.

Because of the increasing distribution and incidence of the disease, the problem of recognition and treatment has become of interest to every physician. Through the brilliant investigations of Spencer and Parker,² a vaccine has been produced which offers complete protection to man against an attack of the disease of the mild type and partial protection against the more virulent forms. The value of this vaccine has not only been proved experimentally but also adequately demonstrated in well controlled studies in man in the highly infested Bitter Root Valley of Montana and the Snake River Valley of Idaho. This vaccine consists of a phenolized emulsion of the viscera of infected wood ticks. It is now produced on a large scale under the direction of Dr. Parker at Hamilton, Montana.

Although the value of the vaccine has been demonstrated, its use is somewhat limited. It is practical to vaccinate only those who, because of their occupation, are constantly exposed to the tick bite and those who live in highly infested areas where the virus is known to possess a high degree of virulence. Because of the wide distribution of the disease in nature and its low incidence in man, it is not practical to immunize all persons who occasionally come in contact with the wood tick or the dog tick.

1. Rumreich, A. S.; Dyer, R. E., and Badger, L. C.: The Typhus-Rocky Mountain Spotted Fever Group: An Epidemiological and Clinical Study of Eastern and Southeastern States, *Pub. Health Rep.* **46**:470 (Feb. 27) 1933.

2. Spencer, R. R., and Parker, R. R.: Studies on Rocky Mountain Spotted Fever, *Bull.* **154**, Hyg. Lab., U. S. P. H. S., 1930.

A much neglected phase of this problem has been revived by the work of Zinsser and Ruiz Castaneda³ on Mexican typhus, a disease that seems quite closely related to Rocky Mountain spotted fever. These workers produced a highly protective serum for the guinea-pig by immunizing a horse to a phenolized suspension of Rickettsia obtained from infected rats previously irradiated with x-rays. Several important similar studies have been made in an attempt to produce an immune serum for Rocky Mountain spotted fever. As early as 1908, Ricketts and Gomez⁴ showed that, following an attack of spotted fever in the guinea-pig and monkey, protective antibodies may be demonstrated by injecting mixtures of virus and immune serum into another animal. They showed that passive immunity may be established in the healthy guinea-pig by injection of blood or serum of an immune guinea-pig. However, they found that the curative properties of the immune serum were low and that prohibitive quantities would be necessary to protect man. They suggested that immune serum of the horse which was found susceptible to inoculation may be developed for the prevention of the disease in man. Ricketts, however, did not complete this phase of his experimental work. Heinemann and Moore⁵ continued the work of Ricketts in 1911. These authors prepared a concentrated horse serum of high protective value for guinea-pigs. This serum was produced by repeated inoculations of large quantities of blood virus of infected guinea-pigs into the horse. It was claimed by these authors that the serum protected guinea-pigs injected with the virus of Rocky Mountain spotted fever up to and including the first day of high temperature. The serum was sent to an endemic center in Missoula for use in the treatment of the disease but no record is noted in the literature of its use in man.

Noguchi⁶ took up this work in 1923 and showed that an effective immune serum can be produced in a rabbit by subcutaneous inoculation of blood virus of the guinea-pig. This serum protects against the disease in guinea-pigs if given during the incubation period but not if given after the onset of the fever.

Despite these encouraging experimental results there has been no further report of an attempt to increase the potency of immune serum against Rocky Mountain spotted fever, and there has been no recorded example of the use of the serum in the prophylaxis and treatment of the disease in man. This is indeed surprising in view of the need of such a serum. An immune serum would be of unquestioned value as a prophylactic measure in persons who have been bitten in localities known to harbor ticks infected with highly virulent

strains of Rickettsia. It would be especially indicated in those cases in which the ticks have been found attached in an engorged state, since it has been shown by Spencer and Parker that infection is most likely to occur after the tick has remained attached to the host for a number of hours and allowed to engorge fully. In light of the available experimental data, the use of the serum in the treatment of the disease is still of doubtful value. However, since the serum is known to possess definite neutralizing powers, beneficial results may probably be obtained if the serum is administered very early in the course of the disease in man. Further investigations on this phase of the problem are much needed.

Current Comment

A TEST IN THE DIAGNOSIS OF HODGKIN'S DISEASE

Recent medical literature contains little that is new about Hodgkin's disease. The exact nature of this fatal malady remains unknown, and the diagnosis is often difficult. Experiments recently reported by van Rooyen¹ may stimulate future research. In 1932, Gordon inoculated rabbits and guinea-pigs intracerebrally with suspensions of lymphadenomatous tissue and in a few days these animals showed spastic paralysis of the hind limbs, rigidity, ataxia, and muscular weakness. These effects were not produced when the animals were similarly injected with suspensions of leukemic, sarcomatous and carcinomatous lymphatic tissue. In these experiments the lymphoid tissue affected by Hodgkin's disease seemed to have some properties that lymphoid tissue did not have when affected by other pathologic conditions. At the Royal Infirmary of Edinburgh, van Rooyen applied this phenomenon as a test in the diagnosis of some doubtful cases. He removed at biopsy enlarged glands from five patients with Hodgkin's disease, one patient with pseudoleukemia, and one patient with lymphosarcoma. After keeping a suspension of this material for ten days in the refrigerator, he standardized it and injected 0.45 cc. of the emulsion into the occipital lobe of the brains of rabbits to a depth of about 3 mm. In other animals he injected this suspension similarly into the frontal lobes. With the material from three of the patients with Hodgkin's disease, van Rooyen obtained, in the animals, typically positive results with the test devised by Gordon. The fourth case gave a doubtful result and a fifth case was negative. The doubtful result in the fourth case may have been due to the fact that the specimen was unsuitable, first, because it was small and, secondly, because this gland had been subjected to intensive roentgen therapy before its removal. In the fifth case of Hodgkin's disease in which the result of the test was negative, the gland removed at biopsy was extremely hard and tough, owing to the presence of fibrosis, and uniform suspensions of it could not be prepared for injection into the

3. Zinsser, Hans; and Ruiz Castaneda, M.: Studies on Typhus Fever: XI. A Report on the Properties of the Serum of a Horse Immunized with Killed Formalinized Rickettsia, *J. Exper. Med.* 57: 391 (March) 1933.

4. Ricketts, H. T., and Gomez, L.: Studies on Immunity in Rocky Mountain Spotted Fever, *J. Infect. Dis.* 5: 221, 1908.

5. Heinemann, P. C., and Moore, J. J.: Experimental Therapy of Rocky Mountain Spotted Fever, *J. Infect. Dis.* 10: 294, 1912.

6. Noguchi, Hideyo: Immunity Studies of Rocky Mountain Spotted Fever, *J. Exper. Med.* 37: 383 (March) 1923.

1. van Rooyen, C. E.: A Biological Test in the Diagnosis of Hodgkin's Disease, *Brit. M. J.* 1: 644 (April 15) 1933.

animals. The results of the test were always negative in animals injected similarly with suspensions of normal, lymphosarcomatous, leukemic and tuberculous lymphatic tissue. The results of the test were negative when the animals were similarly inoculated with streptococcus toxin, sterile milk, dead bacteria, peptone water, finely powdered glass, and some other things. It seemed necessary to allow the suspended material to remain in the refrigerator for varying periods before it became active. Possibly the acuteness of the disease in man bears some relation to the results obtained in the animals. This test deserves further study. It is suggested that glands removed in suspected cases of Hodgkin's disease be subjected not only to histologic and bacteriologic study but also to Gordon's biologic test.

Association News

MEDICAL BROADCAST FOR THE WEEK American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., Chicago daylight saving time, which is one hour faster than central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

August 22. Food Poisoning.
August 24. Peculiar Accidents.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

August 26. The Tonsil Operation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

State Medical Meeting at Colorado Springs.—The sixty-third annual session of the Colorado State Medical Society will be held in Colorado Springs, September 14-16, at the City Auditorium. Dr. Olin West, Chicago, secretary and general manager, American Medical Association, will be the guest speaker at the annual banquet Friday evening, on "Preserving the Professional Aspects of Medical Practice." Guest speakers at the scientific sessions will be:

Dr. John Jay Keegan, Omaha, Surgical Indications in Head Injuries.
Dr. Claud R. G. Forrester, Chicago, Use of Local Anesthesia in Treatment of Fractures.
Dr. Budd C. Corbus, Chicago, Transurethral Resection of Bladder Neck Obstructions.
Dr. George Piness, Los Angeles, The Food Factor in Allergy.

The following Colorado physicians, among others, will also present papers:

Dr. Paul M. Ireland, Pueblo, Tumors of the Thyroid Gland.
Dr. George C. Shivers, Colorado Springs, Avoidance of Pulmonary Complications from Intravenous Arsenicals.
Dr. William H. Crisp, Denver, Improved Surgical Prognosis in Simple Glaucoma.
Dr. Maurice Katzman, Denver, Coronary Thrombosis.
Dr. Willis B. Hardesty, Berthoud, Fifteen Years of Country Practice.
Dr. Isadore D. Bronfin, Denver, Primary Carcinoma of the Lung, Simulating Tuberculosis.

A clinical meeting sponsored by the Colorado Tuberculosis Association will be held Thursday evening, September 14, emphasizing childhood tuberculosis. Drs. Charles O. Giese and John B. Crouch, Colorado Springs, and Harry J. Corper,

Kenneth D. A. Allen and Johanna Gelien, all of Denver, will speak. Dr. Gerald B. Webb, Colorado Springs, will be installed as president at the opening scientific session and will make his address Friday afternoon. He succeeds Dr. Frank B. Stephenson, Denver.

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended August 5, indicate that the highest mortality rate (20.5) appears for Wilmington, and the rate for the group of cities, 10.6. The mortality rate for Wilmington for the corresponding week last year was 12.3, and for the group of cities, 8.9. The annual rate for eighty-five cities for thirty-one weeks of 1933 was 11.3, as against a rate of 11.6 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

University News.—The following full time teaching fellows in medicine have been appointed for the coming year at Georgetown University School of Medicine: Drs. Cyrus M. Gormley, Percy A. Bryant, Jr., and William C. Lambert. Dr. Henry Wigderson has been designated full time teaching fellow in surgery.

Dr. Vaughan Resigns.—Dr. George T. Vaughan recently resigned as head of the department of surgery at Georgetown University Hospital and professor of surgery at Georgetown University School of Medicine, after thirty-six years' service in both positions. Dr. Vaughan, who is 74 years of age, will become professor emeritus, and Dr. James A. Cahill, Jr., professor of clinical surgery at Georgetown, will succeed him.

GEORGIA

Society News.—At a meeting of the Sixth District Medical Society in Macon in June, speakers included: Drs. Samuel T. R. Revell, Louisville, on "Amyotrophies and Myotrophies"; Harold C. Atkinson, Macon, "Acute Pains in Muscles, Nerves and Joints," and William H. Kiser, Jr., Atlanta, "Mental Hygiene in Children."—Dr. William C. McCarver, Vidette, among others, addressed a joint meeting of the Burke and Jenkins county medical societies at Millen in June, on "Diarrheas of Infancy and Childhood."—Drs. Frank K. Boland and Stephen T. Barnett, Atlanta, addressed the Cobb County Medical Society, Marietta, July 5, on "Surgical Treatment of Pulmonary Tuberculosis" and "Irritability," respectively.—Dr. Rudolph F. Bell, Thomasville, among others, addressed the Thomas County Medical Society, June 16, on "Rupture of the Uterus During Labor."

ILLINOIS

Medical Department for Industrial Commission.—The State of Illinois Industrial Commission announces the creation of a medical department, with Dr. Philip H. Kreuscher, Chicago, as director, and Drs. Edward H. Rategan and Daniel E. Meany as examiners. The following list of consultants has also been announced:

GENERAL SURGERY

Dr. Karl A. Meyer
Dr. John A. Wolfer
Dr. John B. O'Donoghue
Dr. Raymond W. McNealy

GENERAL MEDICINE

Dr. Frederick Tice
Dr. Walter W. Hamburger
Dr. Charles A. Elliott
Dr. James H. Hutton

FRACTURES AND TRAUMATIC SURGERY

Dr. Paul B. Magnuson
Dr. Kellogg Speed
Dr. James J. Callahan

ROENTGEN RAY

Dr. James T. Case
Dr. Maximilian J. Hubeny
Dr. Hollis E. Potter

PSYCHIATRY AND NEUROLOGY

Dr. Francis J. Gerty
Dr. Ralph C. Hamill
Dr. George W. Hall
Dr. Lewis J. Pollock

EYE SURGERY

Dr. Harry S. Gradle
Dr. Austin A. Hayden
Dr. Leroy Thompson
Dr. Sidney Walker, Jr.

Chicago

Dr. Kronfeld Goes to China.—Dr. Peter C. Kronfeld, associate professor of ophthalmology, Division of Biological Sciences, University of Chicago, has resigned to accept a position as head of the department of ophthalmology at Peiping Union Medical College, Peiping, China. Dr. Kronfeld was graduated from the University of Vienna Faculty of Medicine in 1923 and served for a time as assistant in the eye clinic there under Prof. Josef Muller. He came to the University of Chicago in 1928 as assistant professor of ophthalmology. He will leave about September 1 for Peiping, going by way of Vienna.

Hundred Years in Prison for Slaying Physician.—Three youths 17, 18 and 20 years old were sentenced to 100 years each in the penitentiary after a trial in the criminal court of Chicago, August 14, at which they pleaded guilty of the murder of Dr. Bernard F. Garnitz last February. Dr. Garnitz was called from his home on the pretense of an emergency case. He drove to the address given, an empty apartment, and was met by the armed youths, who held him up and shot him in the side. He died, March 11. The length of the sentence for this crime sets a record in the criminal court. Judge Epstein in passing sentence, said: "The testimony in this case shows these defendants to be persons of malignant heart. To impose any sentence other than one which would make it impossible for them to ever become a menace to society would be unthinkable." The Chicago Medical Society kept a close watch on this case, which has been in the courts for seven months. About seventy-five members of the society, including the president, Dr. Austin A. Hayden, the president-elect, Dr. Charles H. Phifer, the secretary, Dr. Thomas P. Foley, and Dr. Julius H. Hess of the board of trustees, were present at the trial. For some months previous to this murder several physicians had been robbed after being lured from home on fake calls and in several cases had been fired upon when they did not respond quickly enough to the demands of the gang.

INDIANA

New State Board of Health.—A new board of health of three members has been appointed by the governor, replacing the former board of four members. The appointees are Drs. Ernest Rupel, Indianapolis; Edmund M. Van Buskirk, Fort Wayne, and John C. Glackman, Rockport.

KENTUCKY

State Medical Meeting at Murray.—The annual session of the Kentucky State Medical Association will be held, September 11-14, at the Murray State Teachers College, Murray, under the presidency of Dr. W. M. Martin, Harlan. Dr. Elbert W. Jackson, Paducah, will deliver the annual oration in surgery, on "Treatment of Perforative Appendicitis," and Dr. Caswell C. Turner, Glasgow, "The Hospital as a Community Problem." At the annual dinner Wednesday evening, September 13, speakers will be Drs. Willard Bartlett, St. Louis, on "A Consideration of Four Eras in Medicine as the Basis for a Prophecy," and Oliver P. Kimball, Cleveland, "Clinical Hypothyroidism." A public meeting will be held Tuesday evening, at which Dr. Martin will deliver his official address and Dr. Robert Sory, Richmond, will show a motion picture illustrating trachoma and trachoma work among white people of the United States. There will be symposiums on contagious diseases, obstetric conditions and acute conditions in the abdomen. Among other speakers will be:

Dr. Fred W. Rankin, Lexington, Cancer of the Colon.
Dr. Joseph Gant Gaither, Hopkinsville, Pyloric Stenosis—A Plea for Early Diagnosis.
Dr. Edward B. Houston, Murray, Significance of Cardiac Pain.
Dr. Saul P. Oldham, Owensboro, Hyperemesis Gravidarum.
Dr. Thomas Cook Smith, Louisville, Anemias in Children.
Dr. Earl C. Walter, Mayfield, Dislocations and Fractures of the Elbow.

LOUISIANA

Society News.—Speakers before the Tri-Parish Medical Society at its meeting in July in Soudheimer were Drs. William H. Hamley, Lake Providence, on malaria, and Gideon D. Williams, Lake Providence, on pellagra.—The Shreveport Medical Society was addressed, recently, by Drs. J. E. Knighton, Shreveport, and Urban Maes, New Orleans, on "Uses of Insulin in Conditions Other Than Diabetes" and "Appendicitis After Forty," respectively.

University News.—A series of twelve lectures on public health opened at the Tulane University summer school, June 22, when Dr. John H. Musser, professor of medicine, spoke on "Heart Disease as a Personal and Social Problem." Other lecturers in the series included Drs. William Harvey Perkins on "Our Personal Responsibility for Positive Health"; Thomas B. H. Anderson, "Growth of Governmental Functions in Protection of Health," and Urban D. Maes, "Public Health Aspects of Cancer."

MICHIGAN

University News.—The board of regents of the University of Michigan Medical School has announced the following promotions on the faculty:

Dr. James Hoyt Maxwell to assistant professor of physiology.
Dr. Carleton Barnhart Peirce to associate professor of roentgenology.
Dr. Francis Bruce Fralick to associate professor of ophthalmology.

Gifts of more than \$8,000 for research and for support of the Reuben Peterson instructorship and fellowship were announced.

Society News.—Dr. Carl E. Badgley, Ann Arbor, addressed the Gratiot-Isabella-Clare Counties Medical Society in Alma, July 6, on "Injuries In and About the Ankle."—The Ionia-Montcalm County Medical Society was addressed in Portland, June 13, by Drs. Austin F. Burdick, Lansing, on "Office Treatment and Management of Diseases of the Eye, Ear, Nose and Throat," and Henry D. Chadwick, Detroit, "Modern Treatment of Tuberculosis." The society celebrated its one hundredth anniversary, June 15.

Personal.—Dr. William S. Reveno, Detroit, recently retired as editor of the *Bulletin* of the Wayne County Medical Society after five years' service; Dr. David I. Sugar succeeds him.—Dr. John R. Giffen, Bangor, who has just completed twenty-eight years on the local board of education, has been appointed to another three year term. With the exception of one year, 1915-1916, Dr. Giffen has served on the board since 1904.—Dr. Thomas E. Gibson, Shepherd, has been appointed head of the Isabella County Health Unit.—Dr. Mial R. Lyman, Bad Axe, recently completed fifty years in the practice of medicine.

MINNESOTA

"Tonic" Pedler Leaves the State.—Ray D. Smith abruptly left Minnesota, June 12, rather than stand trial on a charge of practicing healing without a basic science certificate. Smith claimed that he came to St. Paul from Clinton, Ill., and also, it is said, that he had practiced medicine for twelve years and had spent two years at a well known clinic. Following an investigation by the state board of medical examiners he was taken to police headquarters, where he retracted these statements. He was peddling a "Liberty Tonic," said to be manufactured in Memphis, Tenn.

MISSOURI

Research on Physiology of Nerves.—Washington University School of Medicine, St. Louis, has received a grant of \$58,500 from the Rockefeller Foundation toward the expense of conducting a five year research project in the physiology of the nervous system, the university has announced. The work to be undertaken is an expansion of investigations on the nature of nervous activity carried out by Drs. Herbert S. Gasser and Joseph Erlanger and will allow correlation of psychologic, biochemical, pathologic and surgical observations with the earlier studies in pure physiology. The new investigations will be made in the laboratories of the new Oscar Johnson Institute for Research chiefly by George H. Bishop, Ph.D., professor of applied physiology in ophthalmology, and Samuel Howard Bartley, Ph.D., research fellow in applied physiology in ophthalmology.

Fall Clinical Conference.—The eleventh annual fall clinical conference of the Kansas City Southwest Clinical Society will be held at the Hotel President, Kansas City, October 3-5. According to the tentative program, the guest speakers will include the following physicians:

John W. Amesse, Denver, Newer Conceptions of Childhood Tuberculosis.
Otto H. Schwarz, St. Louis, Toxemias of Pregnancy.
James Bertram Collip, Montreal, Physiology of the Anterior Lobe of the Pituitary.
Claude F. Dixon, Rochester, Minn., Malignant Growths of the Left Half of the Colon: Their Surgical Treatment.
Jerome M. Lynch, New York, What the General Practitioner Should Know About Rectal Diseases.
Russell L. Haden, Cleveland, Treatment of Arthritis.
George Draper, New York, Man as a Complete Organism in Health and Disease.
Kellogg Speed, Chicago, Clinical and Pathological Consideration of Fractures of the Neck of the Femur.
Edward C. Ellett, Memphis, Tenn., Recent Developments in Ophthalmology and Ophthalmologic Surgery.
Frank J. Novak, Jr., Chicago, Newer Knowledge of Immunology and Its Practical Application in Clinical Otolaryngology.

The program includes special clinics and round table discussions. Other societies meeting during the week will be Frisco Railway Surgical Association, October 2; the Missouri-Kansas Neuropsychiatric Society, October 6, and the Mississippi Valley Conference on Tuberculosis, October 6.

NEW YORK

Lake Keuka Meeting.—Dr. Clare N. Shumway, Painted Post, was elected president of the Lake Keuka Medical and Surgical Association at the annual meeting at the lake, July 13-14, succeeding Dr. Edward T. Wentworth, Rochester. Dr. Thomas W. Maloney, Geneva, was named vice president and Dr. John A. Hatch, Penn Yan, reelected secretary. Among speakers were Drs. Paluel J. Flagg, New York, on "Asphyxia and Resuscitation"; William D. Johnson, Batavia, "Progress of Medicine"; Frederic E. Elliott, Brooklyn, "Essential Questions in the Economics of Medical Service," and Frederick S. Wetherell, Syracuse, "Sympathectomy in Pelvic Pain."

Dr. Van Duyn Celebrates Ninetieth Birthday.—Dr. John Van Duyn, Syracuse, celebrated his ninetieth birthday, July 24. Dr. Van Duyn is a veteran of the Civil War, the Spanish-American War and the World War, having served in France after he was 70 years old. He was at one time superintendent of the Syracuse state school for mental defectives in Syracuse and served in various capacities on the faculty of Syracuse University School of Medicine. A grandson, Dr. John Van Duyn II, who recently graduated from Johns Hopkins University School of Medicine, and a great-grandson, John Van Duyn III, have the same birthday. Dr. Van Duyn is said to be the oldest living graduate of Princeton University. He took his medical degree at the old Kentucky School of Medicine in 1865.

New York City

Changes at New York University.—The chair of surgery at New York University and Bellevue Hospital Medical College has been named the George David Stewart Professorship in honor of the late Dr. Stewart, who occupied the position for nineteen years. Dr. Arthur M. Wright has been appointed the first incumbent of the new chair. Dr. William C. Lusk, for thirty years professor of clinical surgery, has been made professor emeritus. Dr. Isaac Seth Hirsch has been made professor of roentgenology to succeed Dr. Leon T. LeWald, who retired to the inactive list of the medical faculty. In addition, the following promotions have been announced:

Dr. Samuel Brock, associate professor of neurology.
Milton Levy, Ph.D., assistant professor of chemistry.
Dr. Frederic L. Wertham, assistant professor of psychiatry.
Dr. Samuel Bernard Wortis, assistant professor of neurology.

NORTH DAKOTA

Woman Physician Appointed State Health Officer.—Dr. Maysil M. Williams, former director of the division of child hygiene in the state department of public health, has been appointed state health officer, succeeding Dr. Arthur A. Whittemore. The appointment was made by the public health advisory council, a new body created by recent legislation. Dr. Williams is a native of Canada and received her medical degree at the University of Toronto Faculty of Medicine. She also has a degree in public health from the Harvard School of Public Health.

OHIO

Personal.—Dr. John J. Phair, formerly bacteriologist of the Cincinnati Department of Health, has been appointed to the staff of the International Health Division of the Rockefeller Foundation. He will be at the Research Center for Undulant Fever, Montpellier, France.—The honorary degree of doctor of science was conferred on Dr. Julius M. Rogoff, Cleveland, at the annual commencement of Ohio Northern University, Ada.

Society News.—Dr. Frank H. Lahey, Boston, will address the Cleveland Academy of Medicine, September 15, on "Problems in Gastro-Intestinal Surgery."—A joint meeting of the Mahoning County Medical Society and the Mahoning County Bar Association was held, June 27, in Youngstown; Dr. Edwin A. Hamilton, Columbus, and Hon. F. Rollin Hahn, Youngstown, spoke on medicolegal considerations from the points of view of the physician and the lawyer, respectively.—Dr. Richard Dexter, Cleveland, addressed the Ashtabula County Medical Society, June 13, on "Pericarditis, Acute and Chronic."—Dr. Harry L. Hite, Thornville, addressed the Perry County Medical Society, New Lexington, June 19, on "Cod Liver Oil—Its Preparation and Usage."—Dr. George I. Nelson, Columbus, addressed the Hempstead Academy of Medicine, Portsmouth, on cardiovascular disease.—Dr. Isaac B. Harris, Columbus, discussed acute appendicitis at a meeting of the Madison County Medical Society at the London Country Club, June 21.—Dr. Fred W. Lane, Cambridge, spoke on essential hypertension before the Guernsey County Medical Society, Cambridge, July 20.—Dr. Daniel C. Houser, Urbana, addressed the Greene County Medical Society, Xenia, July 6, on "The Future of Medicine."

PENNSYLVANIA

Society News.—Dr. William L. Estes, Jr., Bethlehem, was elected president and Dr. Jacob Treichler Butz, Allentown, secretary, of the Lehigh Valley Medical Society at the annual summer session at Pocono Manor, August 3.—Speakers at a meeting of the Fayette County Medical Society, Uniontown, August 3, were Drs. William W. Briant, Jr., Pittsburgh, on "Status of the Dick Test for Scarlet Fever"; Edward J. McCague, Pittsburgh, "Bladder Manifestations of Renal Disease"; Walter F. Donaldson, Harrisburg, "The New Deal for Practicing Physicians" and Donald Guthrie, Sayre, "Our Traditional Purpose."

SOUTH CAROLINA

Committees on Economics.—The house of delegates of the South Carolina Medical Association at the annual meeting in Spartanburg appointed the following physicians to form a committee on economics: Drs. James W. Jervy, Greenville; Robert Wilson, Charleston; James Adams Hayne, Columbia; James Moss Beeler, Spartanburg, and Douglas Jennings, Bennettsville. A number of county societies have since appointed similar committees.

Personal.—Dr. Benton M. Montgomery, Marion, has been appointed health officer of Dorchester County, succeeding Dr. George R. O'Daniel.—Dr. William A. Carrigan, Society Hill, has resigned as health officer of Darlington County to accept a similar position in Horry County. Dr. George B. Edwards, Darlington, has been appointed to succeed Dr. Carrigan.—Dr. Julius A. Mood, Sumter, received the honorary degree of doctor of laws from Wofford College, Spartanburg, at the annual commencement, June 5. He was graduated from Wofford in 1875.

TENNESSEE

University News.—Dr. Max Goltman, professor emeritus of surgery at the University of Tennessee College of Medicine, who died recently, left to the university \$1,044.87 for the student loan fund. Dr. Goltman started the fund, which for several years has provided funds for one student and which has been named the Goltman Memorial Fund.

Society News.—Drs. Cassius Ward Friberg and Lee K. Gibson, Johnson City, addressed the Washington County Medical Society, July 6, on the puerperium and on goiter, respectively.—Dr. Conley H. Sanford, Memphis, addressed the Tri-County Medical Association (Carroll, Weakley and Henry counties), July 11, on goiter.—Dr. Leon D. Cotten, Alexandria, addressed the Wilson County Medical Society, August 3, on "Prevention of Rheumatic Heart Disease."—Drs. Walter G. Bogart and Daniel N. Williams, Chattanooga, addressed the Hamilton County Medical Society, August 10, on "Difficult Labor" and "Mechanical Dystocias," respectively.—The medical society of Roane, Loudon, Monroe and McMinn counties held a meeting at Athens, June 15, at which speakers were, among others, Drs. James Gilbert Eblen, Lenoir City, on "Nephritis in Children" and Harold D. Long, Chattanooga, "Management of Summer Diarrheas in Children."—Drs. Douglas C. Seward and Oval N. Bryan, Nashville, addressed the Hardin-Lawrence-Lewis-Perry-Wayne Counties Medical Society, Linden, June 27, on "Subdiaphragmatic Abscesses" and "Agranulocytosis," respectively.—Dr. John Shelton Horsley, Richmond, Va., addressed the Carter County Medical Society and physicians of adjacent counties at Elizabethton, July 29, on "Indigestion."

TEXAS

University News.—A portrait of Dr. Walter H. Mour-sund, dean of Baylor University College of Medicine, Dallas, was presented to the school by the June graduating class. Dr. Raymond S. Willis, president of the graduating class, made the presentation and Drs. William W. Looney and Milford O. Rouse, the acceptance.

Health Departments Merge.—The health services of the city and the county of El Paso have recently merged, with Dr. Thomas J. McCamant, formerly county health officer, as commissioner, according to newspaper reports. It was planned to retain all employees and add a sanitary engineer, a sanitary inspector and two nurses. The Rockefeller Foundation was to aid in the support of the combined departments, the reports stated.

VERMONT

State Requires Internship for License.—After this year, certificates to practice medicine in Vermont will be issued only to applicants who have had one year's internship in a hospital approved by the board. The laws of Vermont have contained authority for this requirement for several years, but the board has not taken advantage of it before. Dr. Frank A. Walsh, Readsboro, has recently resigned from the board.

VIRGINIA

Society News.—Dr. John Blair Spencer, Gloucester, entertained the Mid-Tidewater Medical Society aboard his yacht on a cruise down Chesapeake Bay, July 4, with Dr. Warren F. Draper, state health officer, as guest of honor.—A special committee of the Richmond Academy of Medicine is studying the medical situation in Richmond in connection with a study

of the report of the Committee on the Costs of Medical Care. Dr. Claude C. Coleman is chairman and members are Drs. Stuart McGuire, Rochier W. Miller, Warren F. Draper, Manfred Call, James McC. Tompkins and Charles M. Caravati.

WASHINGTON

Society News.—Three Seattle physicians addressed the Lewis County Medical Society in Chehalis, June 12, as follows: Drs. Pius A. Rohrer, "Transurethral Resection"; Joel W. Baker, "Hemorrhoids and Rectal Surgery," and Louis H. Edmunds, "Treatment of Fractures In and About the Knee Joint."—Dr. John F. Beatty, Everett, among others, read a paper on "Disorders of the Heartbeat," at a meeting of the annual joint meeting of the Snohomish, Skagit and Whatcom County medical societies.

GENERAL

The Chompret Prize.—The recent award of the first Chompret Prize to Dr. Oliver T. Osborne, Yale University School of Medicine, New Haven, Conn., reported in THE JOURNAL, July 22, page 287, was made by the International Academy of Stomatology in cooperation with the American Society of Stomatologists, not the American Stomatological Association. Additional information concerning future competition for this prize may be obtained from Irene Woodcock, D.D.S., 133 East Fifty-Eighth Street, New York.

Whole Time Health Officers.—Nearly 600 counties in the United States have health officers who devote their entire time to their official duties, according to a directory published by the U. S. Public Health Service, in *Public Health Reports*, July 14. In several states groups of counties, varying from two to ten, are combined in districts with one health officer. Kentucky, which has 120 small counties, has 81 health officers; Alabama, with 67 counties, has 52 full time health officers; Ohio, with 88 counties, 44 health officers, and Tennessee, with 95 counties, 40 health officers. In New York, where the township and village are the more important governmental units, only four counties have health service organized on a county basis, with full time officers. The names are listed as of January 1.

American Academy of Ophthalmology and Otolaryngology.—The thirty-eighth annual convention of the American Academy of Ophthalmology and Otolaryngology will be held under the presidency of Dr. Burt R. Shurly, Detroit, in Boston, September 16-22, with headquarters at the Hotel Statler. Major Gen. Robert U. Patterson, surgeon general of the U. S. Army, will be the academy's guest of honor and will deliver an address at the opening joint session, September 18, on "Progress in Ophthalmology in the Military Service Since Civil War Times." Another guest of honor will be Dr. Henry L. Swain, New Haven, Conn. For Sunday afternoon, September 17, the academy has arranged a public meeting at which the following program will be presented after an address by Gov. Joseph B. Ely:

Dr. Edward H. Cary, Dallas, Texas, Cultural, Spiritual and Material Medicine.
Dr. Edward Jackson, Denver, Concerning Eyestrain.
Dr. William L. Benedict, Rochester, Minn., Facts and Fallacies About the Home Use of Eye Remedies.
Dr. Wells P. Egleston, Newark, N. J., Colds—What They Can Do to Our Ears and Our Brain.

A symposium on principles of modern surgery will be presented by Drs. Frank H. Lahey, Boston, John M. Wheeler, New York, and William V. Mullin, Cleveland. Sectional meetings and pathologic conferences will occupy the principal part of the week, and Friday afternoon will be devoted to a visit to Harvard University Medical School, where a program explaining the Harvard system of graduate instruction will be presented. The annual golf tournament will be held Tuesday afternoon, September 19.

Another Way of Swindling Physicians.—Two physicians, one from Kentucky and one from Missouri, have recently reported that a man giving the name L. E. Gibson has swindled them of small sums by drafts drawn on the Atlas Life Insurance Company of New Orleans. In both cases he asked the physicians to give him hypodermics of morphine and paid for the service with drafts, signing his name as an agent of the company. The insurance firm wrote both physicians that the man is not affiliated with the company in any way. It appears that he has carried on similar activities in Georgia, Texas, Arizona and California. Another swindle has been reported by a Minnesota physician. In this case a man calling himself Henry R. Jordan announced that he represented the Meredith Publishing Company, Des Moines, Iowa. He explained that the company was giving free to farmers who subscribed to

their publications an accident insurance policy and that he was to appoint a physician and a dentist in each community to certify claims under these policies. The physician subscribed to the magazine but afterward inquired of the Meredith company whether Jordan was an authorized representative and found that he was not. The publishing firm refunded the physician's money and promised to investigate the man's activities. A similar "racket" was reported by a New York physician, who fell victim to a young man who claimed to represent the "National Automobile Association." He was looking for a physician to act as the association's agent and care for any policyholders who might be injured in the vicinity. It was required, however, that the physician be a member of the association, for which \$15 was collected. The check was cashed and nothing more was heard. Later communication with the National Automobile Chamber of Commerce revealed that the so-called association was unknown to them.

Psychiatrists Establish Examining Board.—At the annual meeting of the American Psychiatric Association in Boston in May, it was decided to establish a board to pass on the qualifications of physicians who seek standing as specialists in treatment of mental and nervous diseases. Dr. Clarence O. Cheney, New York, was appointed chairman of the board, and the members are Drs. William Alanson White, Washington, D. C.; Adolf Meyer, Baltimore; Franklin G. Ebaugh, Denver, and C. Macfie Campbell, Boston. This action was taken after a special conference of the association with the National Committee for Mental Hygiene. In accordance with recommendations of this conference, the board will draw up standards for premedical and medical training for internship and will determine requirements for graduate training which the applicant for certification must have and for the subsequent awarding of a diploma. The conference suggested that candidates for the board's certificate, or diploma, should be required to have at least six years' special training and experience in this field after graduation and internship in an approved hospital, before they can qualify for a diploma. The functions of the board were defined as follows:

1. To establish standards of fitness for the practice of psychiatry.
2. To obtain information and prepare lists of universities, hospitals and preceptors recognized as competent to give part or all of the training requisite for the practice of psychiatry.
3. To arrange, control and conduct examinations to determine the qualifications of those who desire to practice psychiatry.
4. To issue a diploma or other evidence of special knowledge in the field of psychiatry to those who become voluntary candidates therefor and who meet the established standards.
5. To serve hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

The proposed diploma will not, it was emphasized, purport to confer any degree or legal qualifications, the aim of the board being to elevate the standards of qualifications for specialists and to certify those who voluntarily comply with its requirements.

American Congress of Physical Therapy.—The twelfth annual scientific session of the American Congress of Physical Therapy will be held in Chicago, September 11-16, at the Palmer House. At the opening session Dr. Albert F. Tyler, Omaha, will be installed as president, succeeding Dr. Gustav Kolischer, Chicago. Dr. Tyler will deliver an address on "Progress of Physical Therapy." At this session the first annual William Benham Snow Memorial Lecture will be presented by Dr. André Halphen, Paris, France, on "Electro-pyrexia: Newer Technic and Therapeutic Applications." The sectional meetings will be devoted largely to symposiums on the following subjects: hyperpyrexia, arthritis, gynecology, electrosurgery, genito-urinary diseases, transurethral resection of the prostate, ultraviolet in otolaryngology, electric ionization in otolaryngology, tonsil electrosurgery, stomatology and cancer of the head and neck. Speakers before other meetings will include:

Dr. Chevalier L. Jackson, Philadelphia, Dysfunction of the Lower Esophagus.
Dr. Charles B. Gaffney, Chicago, Physical Therapy in Mental Hospitals.
Dr. John Severy Hibben, Pasadena, Calif., Therapeutic Considerations of Photochemical Immunization: Preliminary Report.
Dr. Bernard Fantus, Chicago, Relation of Physical Therapy to Other Forms of Therapy.
Dr. William Bierman, New York, Therapeutic Use of Thermostatically Controlled Heat.
Dr. James T. Case, Chicago, X-Ray Observations of the Mechanical Physiology of the Colon.
Dr. Frederick H. Morse, Boston, Colonic Irrigation Combined with Wave Current Therapy.

There will be sectional clinics at the hotel Tuesday and Wednesday morning and hospital clinics, Friday. The annual banquet will be held jointly with the American Academy of Physical Medicine, Wednesday evening, September 13, at the Palmer House. Among speakers will be Drs. Morris Fishbein,

Chicago, editor of THE JOURNAL, on "The Relation of the American Medical Association to Physical Therapy," and John S. Coulter, Chicago, "The Aims of the Council on Physical Therapy."

FOREIGN

Society News.—Drs. Max Einhorn, New York, and Carl F. Cori, Kirkwood, Mo., will represent the United States at the fourteenth annual international medical postgraduate course in balneology and balneotherapy at Carlsbad, Czechoslovakia, September 10-16. Dr. Einhorn will discuss Banti's disease and Dr. Cori, the influence of epinephrine on carbohydrate metabolism.

New Building at Leeds.—The Algernon Firth Institute of Pathology of the University of Leeds was opened in April. The departments of pathology and bacteriology and of experimental pathology and cancer research, which have been in temporary quarters for some years, will now be centralized in this building, which contains also a large museum space. It was built at a cost of £50,000, of which Sir Algernon F. Firth gave the university £25,000 for cancer research.

British Medical Election.—Dr. Frank W. Ramsay, Bournemouth, was elected president of the British Medical Association for 1934-1935 at the annual session in Dublin in July. Dr. Thomas G. Moorhead, regius professor of physic, University of Dublin, was inducted into the presidency for the present year, succeeding Lord Dawson of Penn. Dr. Ramsay is consulting surgeon to the Royal Victoria Hospital, Bournemouth, and Victoria Hospital, Wimborne. The 1934 session will be held in Bournemouth.

International Congress of Radiology.—The fourth International Congress of Radiology will be held in Zurich, Switzerland, July 24-31, 1934. Members of radiologic societies in all countries and persons introduced by such societies are invited to attend. At the opening sessions, speakers from thirty-two countries will report on the organization of cancer campaigns in each country represented. All radiologic societies are urged to send as soon as possible a list of members of their societies to the general secretary, Dr. Hans E. Walther, Gloriastrasse 14, Zurich.

Graduate School Buildings Begun.—The Chancellor of the Exchequer, Mr. Neville Chamberlain, officiated at the laying of the foundation stone of the new British Post-Graduate Medical School, in Hammersmith, July 17. The new school, which is to be a part of the University of London, is to be associated with a public hospital administered by the London County Council. The government has agreed to contribute £100,000 for the building and equipment of the school and will provide annual grants toward its maintenance. Sir Austen Chamberlain is chairman of the governing body of the school.

New Secretary of Medical Research Council.—Prof. Edward Mellanby, until recently professor of pharmacology at the University of Sheffield, has been appointed secretary of the Medical Research Council of Great Britain to succeed the late Sir Walter Morley Fletcher. Professor Mellanby has been a member of the council since 1931. He recently resigned his post at Sheffield to become Sheld professor of pharmacology at Cambridge. He is especially known for his research on rickets, for which he was awarded the Royal Medal of the Royal Society last year. In 1922 the Royal College of Physicians of London chose him as Oliver Sharpey lecturer and in 1933 as Croonian lecturer. He will assume the secretaryship in January, 1934.

Personal.—Dr. David F. Fraser-Harris, Chiswick, London, received the triennial prize in the history of medicine awarded by the University of Glasgow, Scotland, for an essay on "Antiseptics Before Lister."—The honorary degree of doctor of laws was conferred on Sir Henry Dale, director of the National Institute for Medical Research and secretary of the Royal Society of England, by the University of Edinburgh, June 30. Sir Henry recently visited the United States.—Prof. Harold Collinson has been chosen head of the department of surgery of the University of Leeds, England, succeeding Professor Dobson.—The University of Glasgow recently conferred the honorary degree of doctor of laws on Prof. William Blair Bell, past president of the British College of Obstetricians and Gynecologists.

CORRECTION

Chemotherapeutic Index.—In a Query and Minor Note in THE JOURNAL, July 29, page 391, entitled "Chemotherapeutic Index—Neoarsphenamine Claims," the word minimal appears both above and below the line in the equation. The word above the line should have been maximal.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 29, 1933.

The Dublin Meeting of the British Medical Association

The one hundred and first annual meeting of the British Medical Association, in Dublin, was a great success from both the scientific and the social standpoint. The warmth of the Irish welcome to members from Great Britain was in no way diminished by the antagonism existing between their respective governments.

THE PRESIDENT'S ADDRESS

The president, Dr. T. Giffman Moorhead, regius professor of medicine at Trinity College, Dublin, and president of the Royal College of Physicians, delivered his address, on "The Work of the British Medical Association in Ireland." Referring to the current criticism of medical education, he pointed out that at the first meeting of the association in Ireland, in 1867, discussions took place on the subject in which names famous in Irish medicine figured. Sir Dominic Corrigan devoted a lengthy paper to the subject, while Prof. R. W. Smith, who delivered the address on surgery, also made suggestions. The fundamental idea in our methods should be, in the words of Locke, "to give the student a relish for knowledge and a scientific outlook." As the mental capacity of the average person is limited, the subjects should be taught from a vocational standpoint and with a view to illustrating scientific principles. Dr. Moorhead deplored the recommendation of the General Medical Council that special courses should be given on so many specialties. At any rate these special courses should have their corrective in the outpatient department, where patients not already labeled will be seen by the student and where habits of rapid diagnosis may be acquired. There the student will see patients in exactly the same way as he will see them after qualification, whereas the systematic study, for example, of tuberculosis or venereal disease in hospitals entirely devoted to the treatment of such cases presents the patient from a different angle. Specialized courses were important when a student had already acquired a general grasp of the principles of his profession. Dr. Moorhead had always held that all that could be done in the course of the medical curriculum was to instil a broad knowledge of principles. With these a student placed on his own responsibility was capable of continuing his education and of acquiring all the details which he required with extraordinary rapidity. Those who spoke at the first Dublin meeting grasped the true meaning of medical education and gave a great impetus to the realization of their wishes. The remainder of the address was devoted to the part played by the British Medical Association in improving public health in Ireland and the conditions of the "dispensary doctors," who are paid by the state for attending the working classes.

THE EFFECTS OF MOTORING ON HEALTH

In the Section of Medical Sociology, Sir William Wheeler, a surgeon, opened a discussion on the effects of motoring on health. Automobiles were a great advantage in the rapidity of transport of the physician in urgent cases or of the patient to the hospital, but against this must be put the cost of bodily wear and tear of the physician in prolonged traveling by automobile. There were fatigue, eyestrain, and fear of accidents. No surgeon should drive his car any considerable distance if an operation was contemplated. This produced fatigue at a time when alertness was demanded. In some cases the fatigue was overpowering and after hairbreadth escapes medical drivers had to pull up and sleep by the roadside. Another danger was poisoning by exhaust gases. The blood of traffic policemen

had been found to contain carbon monoxide, and the blood of those who constantly motored must be similarly affected. The fumes were cumulative in action and predisposed to pulmonary and other diseases.

The nuisance of the noise made by automobiles at night was mentioned in the discussion. The high mortality of the roads was attributed to bad driving, but the man who killed a pedestrian always got off. Lieutenant Colonel Pickard of the Safety First Association said that half of those killed in road accidents in Great Britain were pedestrians, one fourth motor cyclists and from one eighth to one sixth pedal cyclists. Most of the children killed were under 6, and most of the adult pedestrians were over 45. Youthful motorists were the worst sufferers. Human failure accounted for 85 per cent of the accidents, road or vehicle defects for but few. Mr. Zachary Cope, a surgeon, pointed out that accidents were more common in cities and congested parts, but the proportion of those fatal was only half that of accidents in the surrounding country, because of the greater speed. He had given up driving because he found that no one could do justice to an operation after it. Dr. MacErlean, Dublin city coroner, said that his experience showed that most accidents to pedestrians occurred near the curb and when cars were going slowly. The majority occurred when the pedestrian was stepping off the path. Cases of drunken motorists did not occur much in Ireland.

VITAMINS IN PRACTICAL EXPERIENCE

In the Section of Diseases of Children, Dr. Leslie Harris said that correct nutrition could not be left to instinct, to the use of "natural unspoiled foods," to a varied diet or to a process of free selection. Recent official reports showed that no less than 80 to 90 per cent of the elementary school population of London gave evidence of having had some degree of rickets, notwithstanding the decreasing severity of the disease. Under our climatic conditions, rickets was almost inevitable if special prophylactic measures were not taken. Cod liver oil had proved a sterling remedy in the past but had the disadvantage that it might be impracticable to give enough for protection in every case. The most certain remedy was viosterol. Correct dosage was essential, as excess produced hypervitaminosis.

Vitamin A could not be regarded as a general anti-infective agent. Although no evidence existed of any widespread deficiency in this country comparable to that of vitamin D, it was advisable to see that the diets contained an adequate supply. The infant received only a moderate supply prenatally and in the milk. The effect of adding extra vitamin B to the infant's diet required further study. There was no conclusive evidence that lack of this vitamin was responsible for the prevalence of constipation.

All infants should be dosed with vitamin C in the form of orange juice. It was destroyed to a greater or lesser extent in the pasteurization of milk, which, however, was never an active source. Adequate nutrition was not possible for certain sections of the community under existing economic conditions, and much scientific knowledge of nutrition already won failed to gain sufficiently wide recognition or practical application.

GYNCOLOGIC ASPECTS OF ENDOCRINOLOGY

In the Section of Obstetrics and Gynecology, Dr. Emil Novak of Baltimore said that the practice of gynecology without at least some knowledge of endocrinology was fast becoming an incongruity. It was this asset plus a knowledge of gynecologic pathology which marked the difference between the real gynecologist and the mere gynecologic operator.

COMPULSORY VACCINATION

A motion reaffirming belief in the efficacy of vaccination, but expressing the view that the time had arrived to consider

whether greater protection against smallpox would be afforded by voluntary rather than compulsory vaccination was brought forward. It was pointed out that compulsion now existed only in name and not in fact (exemption being secured by a declaration of conscientious objection). A great obstacle to the education of the public in the matter of vaccination was the natural objection to anything in the way of compulsion. The motion received little support. An amendment was moved expressing belief that vaccination and revaccination provided the only effective methods known for preventing smallpox and that the association would welcome any additional methods of encouraging their more extended employment. The amendment was carried by a large majority.

MEDICAL EDUCATION

A report of the committee of the council of the association on medical education was submitted. The state of the profession was such today that the student preparing for it should be required to give evidence that he had reached a higher standard in some subjects of general education than was the case at present, and that he was grounded fundamentally in the general principles of chemistry, physics and biology. Then in the course of the medical curriculum anatomy and physiology should be taught as interrelated subjects and with the object of studying the living body rather than the dead. A lengthened period would be available for clinical study, which might be divided into two periods, one of not less than two and one-half years on much the present lines, with less attention to specialism than now, and the second a continued clinical period thereafter of not more than nine months, in which clinical instruction should be accompanied by a certain amount of responsible experience. A lengthy discussion took place in which it was stated by a member of the council, Sir Ewen Maclean, that the great urge for reconsideration of the medical curriculum came from America, where the numbers joining the profession led to a crisis. That position had not been reached in this country, but the time would come when a higher entrance standard for students would be amply justified. The report of the committee was approved unanimously.

PARIS

(From Our Regular Correspondent)

July 5, 1933.

Applications of Heat to the Medulla Oblongata

Research presented before the Academy of Medicine by Mr. and Mrs. André Pupier and Mr. René Prier has shown the good effects, in the treatment of vomiting of widely different origin, of the application of heat to the medulla oblongata, which appears to be involved in the mechanism of many cases of vomiting. The causes of vomiting are many, and the incitations to vomiting may have various points of origin—abdominal viscera, pharynx, inner ear—all of which involve the medulla oblongata. Certain poisons, such as apomorphine, act directly on the medulla oblongata and provoke vomiting. Further, the masseurs of India massage the back of the neck of submerged and asphyxiated persons to restore the vitality of the bulb. The authors raise the question whether an exterior physical action, more particularly the application of heat to the bulb, would not forestall or check vomiting irrespective of the cause. The necessary thermic effect was accomplished by means of electricity. With a temperature of about 50 C. (122 F.), heat applications were found to be effective when continued for from two to ten minutes. With the fluoroscopic screen one can observe that the action of heat on the bulb eliminates spasms of the pylorus that have not yielded to the usual therapeutics. The vomiting of pregnancy, other forms resulting from hepatic or gastric disorders, nausea due to various modes of locomotion (railway train, boat, automobile, airplane) were quickly checked

in nearly every case. Even seasickness was much benefited. Migraine and insomnia were favorably influenced; urticaria was attenuated. From numerous observations, furnished by both patients and physicians and collected by the authors, it appears that the applications of heat to the bulb have given good results in more than 90 per cent of the cases in which they have been employed.

Congress of the French Society of Gynecology

The second Congrès de la société française de gynécologie convened, June 3-5, at Luxeuil, under the chairmanship of Dr. Pierra, chief physician of the center, and under the honorary chairmanship of Professor Keiffer of Brussels. A large number of gynecologists attended, representing many foreign countries, including Argentina, Belgium, Chile, Italy, Rumania, Spain and Switzerland. The chief topic for discussion was "Pain in Gynecologic Practice."

F. and G. Jayle considered the innervation of the female genital apparatus, the pelvis and the perineum. They set up an anatomic classification of pain: peritoneal pain, visceral pain, cellular pain, pain due to compression, and central algias. These pains are due most commonly to a complication of phenomena involving simultaneously the two nervous systems. Professor Keiffer presented a study on the physiology of the genital nervous apparatus in woman.

Professor Binet of Nancy discussed the semeiologic value of pain in gynecologic disorders, its interpretation, its significance and its relations with purely psychic phenomena. X. Colaneri and F. Douay of Paris proposed the classification of abdominopelvic pains. Professor Laffont of Algiers read a paper on extrapelvic pain.

PAIN FROM THE THERAPEUTIC POINT OF VIEW

The second half of the congress discussed the therapeutic problem of pain. Dr. L. M. Pierra considered the indications for such therapy, which must always be based on the anatomy of the organic lesion, though that lesion be never so slight, and to which one must give careful attention before considering the psychic factor, the importance of which must not, however, be forgotten. He reviewed the various modes of treatment for periodic or continued pains.

Professor Timmern, L. Netter and A. Pecker reviewed the physical therapeutic methods for the treatment of pain: electrotherapy, irradiations and kinesitherapy, with their respective indications and their forms of technic. Professor Cotte of Lyons presented the surgical forms of treatment for the types of pain in the field of gynecology; periarterial sympathectomy, resection of the presacral nerve, section of the internal spermatic plexus, ovarian innervations, neurotomies of the internal pudendal nerve, and chordotomies, of which he gave the technic and indications.

Medical School in French West Africa

The Academy of Colonial Sciences heard recently an account given by Dr. M. Blanchard of the school of medicine of French West Africa, which was founded in 1919 for the purpose of training native physicians, midwives, veterinarians, and, later, visiting nurses. Recruiting is done either among the pupils of the Ecole William-Ponty, in Gorée, Senegal, or among the pupils of the Lycée Faidherbe in St. Louis, Senegal. The candidates must submit to a competitive examination and must hold various certificates or diplomas. They agree to serve for ten years. All their expenses while in school are defrayed by the authorities. The school has graduated 120 physicians, 18 pharmacists, 5 veterinarians, 175 midwives and 22 visiting nurses, all natives. Further, the school functions as a center of public hygiene. Cases of syphilis are detected here, and vaccinations against tuberculosis are made. In 1932, 1,452 vaccinations with the BCG vaccine were made. The total number of pupils

pursuing courses in the school year 1932-1933 was 141. Dahomey furnishes the largest number of pupils (thirty physicians and sixty-eight midwives); Sudan comes next (thirty-one physicians and thirty-nine midwives).

Rat-Catching Cats

As a result of the crusade carried on by Dr. Loir, director of the public health service of Havre (and a nephew of Pasteur), the destruction of rats by the use of a special breed of cats trained for the purpose is proceeding rapidly. The wharves of Havre have been completely rid of rats. Mr. Herriot, the mayor of Lyons, has created in the city a place for the breeding and training of rat-catching cats, the results of which have met all expectations. Mr. Chiappe, the prefect of police of Paris, has secured from the municipal council an appropriation for a breeding place for rat-catching cats, which will be installed in the abattoirs at Vaugirard, where meat that would otherwise be wasted will be given the cats. For the initial cost of installation and for the payment of wages to the personnel in charge of the breeding place, the prefect requested an appropriation of only 39,750 francs (\$2,158), 30,000 francs of which will be supplied by the city of Paris and the remainder by the department of the Seine.

BERLIN

(From Our Regular Correspondent)

July 10, 1933.

The Compulsory Work Service and Medical Students

The voluntary work service (THE JOURNAL, April 8, p. 1122), which was designed to provide work for unemployed juveniles, whereby their health and morale would be benefited, has been changed by the new government into a compulsory work service, in which educational and political factors are interwoven. The plan is that the work service, by September 30, shall comprise 300,000 men, which number will be increased by Jan. 1, 1934, to 350,000 men, and by April 1, 1934, to 700,000 workers. The compulsory work service affects all classes and covers a period of two years. No provision is made for one-year volunteers, as in the German army before the war, in case entrants had completed a certain number of classes in the secondary schools. Exemptions will be granted only by reason of bodily unfitness or on the basis of special conditions in civil life. The person so exempted must pay a work tax in lieu of service. As regards physicians, engineers, technicians, and representatives of other professions, who might claim special consideration in the work service, special privileges in the application and the distribution of the work service period can be granted only to the extent that professional studies must not be interfered with unduly. Rust, Prussian minister of public instruction, addressed the students gathered in the opera house square in Berlin and explained the new plan. He stated that the plan of creating a compulsory work service for students had developed from the idea of the work year, which was designed only to check the flood of students entering the universities. A student will now serve one year in the work service before entering the university. He will learn to perform physical labor alongside laborers, farmers and craftsmen. Students will receive no privileged treatment; they will find a spade ready for them and a very primitive camp. Those who fail to make good in work camps will lose the right to serve as academic leaders in Germany. The work service is designed to be a mold of character. The really great and practical school does not lie in the secondary schools or in the universities but in the camp of the work service, where instruction and the spoken word cease and actual deeds begin. In the camp, practical views of the world and of life must be inculcated. At first only students of the first four semesters will be enrolled. It has been decided that the fourth semester shall begin its work service during the fall vacation.

The Recent General Census

A preliminary report of the results of the census of the German reich, recently completed, is now available, after three weeks. June 16, the population of Germany (exclusive of transients) was 65,300,000. In addition, there is the Saar region (at present separated from Germany) with a population of about 830,000. The total of 66,100,000 is about 1,700,000 less than the population, before the war, of the undiminished territory. Compared with the census of June 16, 1925, the 1933 census shows an increase of about 2,700,000, or 4.4 per cent (exclusive of the Saar region). The male sex is represented by 31,700,000, and the female sex by 33,600,000. The excess of women over men, as was noted also in the 1925 census, showed a decrease. According to the 1933 census there are 1,060 women to 1,000 men. The density of the population has increased from 133 inhabitants per square kilometer in 1925 to 139 in 1933. Of the European countries only Belgium, the Netherlands and England have a higher density than Germany. In actual point of numbers, Germany is, after Russia, the most populous country of Europe. The demographic development since 1858 is shown in the adjoining tabulation.

Year	Population	
1858.....	36,200,000	
1867.....	40,000,000	
1892.....	50,000,000	
1905.....	60,300,000	
1915.....	67,800,000	
1916.....	67,700,000	
1918.....	66,800,000	
1920.....	61,800,000	(corresponding to the status of 1907)
1925.....	63,177,000	
1931.....	65,437,000	

Prussia, the largest political unit of Germany, has a population of 39,958,073. The population in the fifty-two (with Saarbrücken, fifty-three) large cities, with 100,000 or more inhabitants, is 19,700,000, or 30.1 per cent of the total population. Berlin has a population of 4,202,000. Hamburg, the next largest city, has a population of 1,092,400.

More Uniformity in the Leagues of the Health Insurance Societies

There have been many divisions in the leagues of the *krankenkassen*, with the result that party jealousies have disturbed cooperative endeavors; but now a merger of the *Hauptverband deutscher Krankenkassen*, which was under socialist leadership, with the *Gesamtverband der Krankenkassen Deutschlands*, which leaned toward the Center, has been brought about. The new organization is named *Reichsverband der Ortskrankenkassen*, which constitutes a uniform league of local *krankenkassen*. In order to promote the occupational reorganization of health insurance, a merger of the supreme leagues of the *krankenkassen* (*Krankenkassenspitzenverbände*) has been effected, in which the federal leagues of the various *krankenkassen* collaborate.

Reorganization of the Red Cross

Alongside the sanitary units and the chapters of the Red Cross there have existed other similar organizations, the best known of which was the *Arbeiter-Samariter-Bund*, under socialist leadership. In Prussia, and in those German *länder* in which the *Samariter-Bund* has not been dissolved, this league, after reorganization of its units in keeping with the principles of the national-socialist party, is to be absorbed into the ranks of the Red Cross. This task will be carried out by Dr. Hocheisen, generaloberstabsarzt, retired, the head of the sanitary service of the storm troops, who will soon complete the reorganization of the German Red Cross Society in line with the national-socialist movement.

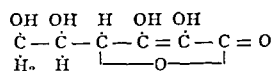
Vitamins and Cellular Metabolism

A short time ago, Otto Warburg reported his experiments on a "second respiratory ferment," which is entirely different

from his "first ferment," is an iron-containing dye resembling hemin, and is apparently widely distributed. It is a yellow, iron-free dye, fixed to protein. If the air is excluded and it is brought in contact with the decomposition products of sugar, it derives hydrogen from them, "oxidizes" them, and is, at the same time, itself reduced, losing its color. If oxygen is admitted, the substance passes the hydrogen on to the oxygen and becomes yellow again. In this manner it transfers hydrogen from cellular substances to oxygen; that is, it contributes to the oxidation of the cellular substances—in other words, to cellular respiration.

Now R. Kuhn, P. Györgyi and Wagner-Jauregg have found the same or a very similar yellow pigment as a component of vitamin B₂ and that this has apparently precisely the same effect. The water-soluble vitamin B consists of several components, two of which are known, B₁, which is active toward beriberi, and B₂, which has many indistinct actions of importance in metabolism. If it is absent, pellagra and other disorders develop, and there are also connections with pernicious anemia and other severe disturbances. This pigment also can be reduced by cellular substances and can be oxidized again by oxygen. Vitamin B appears, therefore, to be identical, as to group, with the "second respiratory ferment" and to play the same part in cellular metabolism; namely, that of a catalyzer of oxidation, which through transport of hydrogen exerts a decisive action on processes affecting the living substance. It would appear, therefore, that the rôle of this vitamin is explained in principle.

The same assumption is now being made for vitamin C, the antiscorbutic principle. Some time ago the astounding announcement of the young Norwegian investigator Rygh flashed across the scientific world. In the meantime it has been shown that his assumption that vitamin C is derived from the well known alkaloid narcotine is an error. On the other hand, the Hungarian investigator Szent-Györgyi was the first to show that vitamin C is a sugar-like substance, so-called ascorbic acid (C₆H₈O₆), which he found in orange juice and in young plants. This substance can be obtained in a pure and in a crystalline form; in doses of 1 mg. daily it protects against scurvy. It has the strongest action as yet discovered and can be regarded tentatively as the real vitamin C. The finer details of the structure of vitamin C are not yet established. Just recently, however, Fritz Michael, who is working with Professor Windaus, in Göttingen, has supported a definite formula with good evidence:



It appears that vitamin C will be the first vitamin to have its action explained. In scurvy, the chain of cellular oxidations necessary for life must have been interrupted. In this connection, the following interesting fact has been established: Dogs and rats can live indefinitely without any intake of vitamin C, without showing symptoms of scurvy. But ascorbic acid in large quantities is always found in their suprarenals. It is evident that they are able to synthesize that acid. Since ascorbic acid, in the metabolism of these animals, probably plays a similar part to that played in other animal species, it appears likely that in these cases it fulfils the functions of a hormone.

Attention may be called to some statements that A. Lüttringhaus of Heidelberg made, concerning the chemistry of vitamin D, at the recent session of the *Verein Deutscher Chemiker*. After the isolation in pure form from viosterol had been accomplished in Germany and England, in 1931, Windaus of Göttingen isolated, from ergosterol irradiation products, six isomeric substances, and he showed that these are formed photochemically in a definite irreversible succession—sometimes following one another and sometimes side by side. Vitamin D alone has a

rachitic potency, yet its two neighbors in the photochemical series have the property in common with it that they exert a poisonous action in very high doses. Although the composition of the primary substance ergosterol has been abundantly established, no precise statements can be made in regard to the structure of vitamin D or concerning the changes occurring within the molecule as brought about by the irradiation. Not until the vitamin has been secured in a pure state from fish oils will it be decided whether the artificially prepared product is identical with it.

The Notifiable Diseases in 1931

According to recently published statistics of the federal bureau of health, in the year 1931, there occurred only one case of typhus and five cases of leprosy. The ordinary transmissible diseases ran their usual course, though diphtheria, scarlet fever, typhoid and paratyphoid, puerperal fever and trachoma showed a marked decline over the previous year. The morbidity on the basis of 10,000 of population was, for diphtheria, 8.9; cerebrospinal meningitis, 0.1; scarlet fever, 7.4; poliomyelitis, 0.3; meat poisoning, 0.3; paratyphoid, 0.4; typhoid, 0.7; dysentery, 0.4; anthrax, 0.02; puerperal fever, 33. During the period 1925-1931, the years 1929 and 1930 were particularly unfavorable for diphtheria; 1927, 1928 and 1929, for scarlet fever, and 1925 and 1926, for typhoid.

ITALY

(From Our Regular Correspondent)

June 15, 1933.

The Medicosurgical Society of Pavia

The Società medico-chirurgica of Pavia met recently under the chairmanship of Professor Ferrata.

Bonezzi spoke on the variations in some strains of dysenteric bacilli studied with monocytogenic cultures. He proposed certain modifications in the technic of the preparation of such cultures. By the use of Peterfi's micromanipulator he studied a peculiar process of dissociation in certain dysenteric strains in which was produced spontaneously a variation of the fermentative potency on maltose. He found that under such circumstances the presence of the bacteriophage can be excluded, although monocytogenic colonies can be secured that may or may not exert a fermentative action on maltose.

Bianchi and Cattaneo discussed vaccinotherapy by the intravenous route in undulant fever. The injection of a small quantity of vaccine produces an intense reaction only in persons affected with undulant fever, so that it will be found useful as an aid in diagnosis.

Cavallerio presented, as a contribution to the technic of anaerobic cultures, a new type of test tube with two branches, which, on the basis of the principle of the biologic method of Fortner, is adapted for the securing of excellent cultures, in a solid or a fluid medium; also of micro-organisms more sensitive to the action of oxygen.

Ferrari called attention to the behavior of bilirubinemia in pulmonary tuberculosis. In seventy cases he always found bilirubin in the blood, but the average quantity was less than that observed in thirty-five normal persons.

Bordonaro reported his histologic research on the changes in the conjunctival epithelium in cases of trachoma and of ophthalmia neonatorum of nongonorrheal origin. He holds that the discovery of the "inclusions" of Halberstaedter and Provaczek has no special significance, they being due to a chronic irritative state of the conjunctiva. He cultivated, in three cases out of four, a micro-organism like that which he had isolated previously in other trachomatous persons, which proved to be identical with *Bacterium granulosis*. But on inoculation of the organism in the conjunctiva of the ape he was unable to discover any lesion.

Gavazzeni studied lipemia in splenomegalias of various types and found that in many of these morbid types there is hyperlipemia. The speaker believes that the spleen plays a part in the regulation of the lipid equilibrium of the organism.

Social Medicine

Before the senate, during the discussion on the proposed budget of the minister of the interior, of which the general management of the public health service constitutes a part, Professor Maragliano spoke on the crusade against tuberculosis. The speaker urged that the current law on compulsory insurance against tuberculosis be extended to teachers and employees. He called the attention of the government to the need of publicity campaigns to instruct the masses in regard to the causes of tuberculous disease. The speaker discussed the scientific methods of combating the disease and expressed the conviction that the application of measures of a doctrinal character would not retard developments. Recently a circular letter was sent out to the prefects urging vaccination against tuberculosis. Professor Maragliano favored compulsory extension of such vaccination by the use of killed vaccines that are absolutely harmless.

Responding to Senator Maragliano and to other speakers, the undersecretary of state pointed out that the government does not regard it as feasible to impose on the citizens the obligation of vaccination against tuberculosis, for the reason that, in the field of experimental science, all doubt in regard to the safety and value of such vaccination has not yet been removed. The government has, however, favored in every way possible voluntary vaccination. Likewise, although it is not regarded as advisable to make antityphoid vaccination compulsory, such compulsory vaccination has been established for persons who are most exposed to contagion, and the prefects have the authority to extend the obligation of vaccination when it shall appear advisable in view of existing circumstances.

Bacillus Tuberculoophilus

Professor Puntoni and Dr. Favia, in studying the avirulent strain of human tuberculosis, were able to discover that the peculiar moist and flattened appearance of cultures of that strain on potato medium is due to the presence of a bacillus that, for many years, has lived in association with it. If the mycobacterium is freed from its associate, the cultures regain the dry and marbled aspect that is typical of tubercle bacilli. The authors have named the associated bacillus "*Bacillus tuberculoophilus*" and have described the characteristics in a communication to the Federazione per la lotta contro la tubercolosi. It is gram negative, non-acid resistant, sporogenic and exceedingly polymorphous. The association with the Koch bacillus results to its advantage but the fact that the human strain of pulmonary tuberculosis has become avirulent raises the question whether such biologic mutation may not be due to the action exerted by the tuberculophil bacillus. The speakers tried the association with new tuberculous strains—human, bovine and avian—and secured a positive outcome in eight of the strains studied.

Venesection in the Treatment of Amenorrhea

Dr. Merletti of Ferrara has used venesection as a form of treatment in certain types of amenorrhea. In communicating his results to the Accademia delle scienze mediche e naturali of Ferrara, he said that the use of this method requires a precise diagnosis of the pathogenesis of a given amenorrhea. The method attenuates the disturbances associated with amenorrhea due to the natural or early artificial menopause and may reestablish the regular menstrual rhythm in many cases of amenorrhea due to chilling or to emotional causes. The amount of blood to be withdrawn should be around 200 Gm. Venesection may be, in some cases, repeated after an interval of two or three months. The biologic mechanism of this method of treat-

ment is not clear, but from the clinical point of view the results are good.

The Reticulo-Endothelial System

Professor Luzzatto delivered recently, before the Trieste Medical Society, a lecture on the reticulo-endothelial system. He criticized the methods employed heretofore to establish the functional capacity and referred to the method that he introduced in the clinic, which consists in testing in individual subjects the capacity for the production of cytolytic antibodies. Luzzatto has examined by his method many persons and has become convinced that it will be possible to acquire in this manner practical conceptions regarding the prognosis of infectious diseases. It will be possible, too, he thinks, to classify disorders of the reticulo-endothelial system, the classification having as its basis the only one that is truly feasible for the clinic; namely, the direct observation of the sick.

Professor Alessandri Honored

At the Policlinico in Rome, ceremonies were held recently in celebration of the completion of thirty years of teaching by Prof. Roberto Alessandri, director of the Clinica chirurgica in the capital. For the occasion the pupils of Alessandri published a manual of surgery, and Professor Egidi an "Atlas" on gastric resection; also a special number of *Il Policlinico* containing writings of Italian and foreign surgeons was published. A gold medal was presented to Professor Alessandri.

PRAGUE

(From Our Regular Correspondent,

June 27, 1933.

A Favorable Health Report

The figures on the public health situation have been awaited with interest, as 1932 was the third year of the economic depression. During the winter, the unemployed attained the number of some 800,000, which is about 6 per cent of the whole population. In spite of this, the final record of the year is rather favorable. The population of Czechoslovakia attained the figure of 15,000,000. The birth rate continued to decline but not as rapidly as was seen during the first years of the depression. The general mortality continues to remain low and even to decline in some parts of the country. The general mortality was about 14. This was the sixth year without a case of smallpox registered; this was undoubtedly due to enforcement of the compulsory vaccination and revaccination law. Typhus fever continues to appear sporadically in the eastern part of Czechoslovakia. The blot on the picture is the appearance of diphtheria in epidemic form. During that year a prevalence of diphtheria was registered which has no parallel in the records since the beginning of registration in 1890. Almost 32,000 cases (240 per hundred thousand of population) with some 2,500 deaths (17 per hundred thousand) were due to this disease. The epidemic was concentrated in the western provinces in spite of extensive propaganda for preventive vaccination made there and a relatively high percentage of immunized people in some parts of the country. The high prevalence of diphtheria has been observed simultaneously in surrounding countries. Scarlet fever appeared only in mild form. Typhoid continued to decline in the western part of the state but in the east registered a sharp increase both in incidence and in mortality. Infantile paralysis continued to appear in small epidemics all over the country. In contrast with the past, when the disease was almost unknown in Czechoslovakia, it seems to have established itself during the last three years as a permanent menace to children. Measles and whooping cough did not cause any serious damage. Influenza attained epidemic prevalence in the western part of the country toward the end of the year. The tuberculosis mortality fell the first time below 150 per hundred thousand. The infant mortality rate continued to decline in the western

part of Czechoslovakia and attained there the lowest figures in history (around 114). On the contrary, the infant mortality rate for Slovakia and Carpathian Russia continues almost on a horizontal level. It is difficult to say whether the generally favorable picture for 1932 is due to social measures which Czechoslovakia has taken for the protection of its unemployed or whether it is due to causes that lie beyond human power.

Cancer of Lungs Among Uranium Miners

The lung cancer of Joachimstal continues to attract attention. The disease was known for many years among the miners in Schneeberg in Saxony but was described only a few years ago among the miners of the uranium mines in Joachimstal, from which radium is being produced. A commission was set up by the Czechoslovakian government to investigate this disease and its work was endowed by a grant from the president of the republic. The committee ascertained that the disease has been prevalent for many years in these mines but was not diagnosed as such, the high mortality among the miners being attributed to tuberculosis. It was found that about half of the deaths among the miners of Joachimstal can be attributed to the cancer of the lungs. The disease appears among the miners only after many years of work in this region and the average age of those who die of lung cancer does not differ materially from those who die from other causes. The average age of both these groups is about 53 years. The investigative work of the committee was hampered by the attitude of the miners and their families, who refused to submit to periodic examinations and necropsies in case of death. To obviate this, a special ministerial decree was issued which authorizes the chief physician of the miners' insurance to enforce a physical examination of the miners. A special bonus is given to the family of a miner who has died of lung cancer in order to obtain consent for a necropsy. The disease has been put on the list of the occupational diseases that fall under the workmen's compensation act. Besides this a special law is being prepared in the ministry of health which will regulate the preventive measures during the process of fabrication of radium and during its use for therapeutic purposes.

Pension Insurance for Physicians

The medical profession of Czechoslovakia is considering the possibility of obligatory insurance for physicians, especially those who have an insurance practice. It has been mentioned previously on various occasions but was always refused by the profession on the ground that it would represent a further step toward the socialization of medicine. The present economic situation has resulted in a change of view. The principle of pension insurance for physicians has already been officially accepted by the medical organization and a legal basis is now being sought for its application. The main difficulty lies in the fact that physicians claim that they have a right to contribute a portion of the pension fund as have all other kinds of employees. Of course, the case of employment of physicians is complicated because the physicians do not have a single employer, as is the case in most of the occupations, because they work usually for numerous insurance funds. There is in Czechoslovakia a law on pension insurance for independent wage earners but it has never been put into effect. It was not found practical to collect fees from this class of people. Under this law, physicians would not obtain any contribution from their employers. Therefore a solution is sought through a special fund to which both the insurance bodies and the physicians would contribute regularly an equal share.

A Meeting of Cardiologists

A cardiologic congress, organized by the Czechoslovakian Cardiologic Association under the presidency of Prof. V. Libenský, was held in Prague, June 2-4. More than 200

members participated in the congress and about one fourth of them came from foreign countries, especially France, Belgium, Rumania, Poland, Italy, Spain and Great Britain. The main topic for consideration by the congress was the pathology of heart muscle. Prof. A. Clerc of France lectured on the prognostic value of electrocardiographic examinations, and Dr. T. S. Cotton of London on diseases of the myocardium from the clinical point of view. Of the sixty papers read, special attention was paid to the paper of Prof. J. Bělehrádek of Brno on physical chemistry of the heart action and by Prof. T. Pezzi of Milan on roentgen examination in heart disease. The congress was held under the auspices of the president of the republic. Visits were made to medical institutions in Prague and to the famous watering places Karlsbad, Joachimsthal and Marienbad. The attendance from foreign countries shows that the Czech Cardiologic Association has a high reputation even outside the country, thanks chiefly to its founder and president.

Death of Professor Rubeška

With the death of Prof. Václav Rubeška has disappeared the last representative of a generation which founded the Czech school of medicine. Professor Rubeška was born in 1854 in southern Bohemia and obtained his medical degree in Prague, where he worked with the gynecologist Pawlík. His chief work as a teacher was the education of midwives, which he brought to a high level. He became the director of the Prague School of Midwives. This chief interest did not prevent him from purely medical teaching. His method was to concentrate on a small number of medical students and to give them a thorough and well rounded training. He wrote a comprehensive textbook on obstetrics. Ninety-three scientific contributions of his in the field of gynecology and obstetrics are scattered in Czech and German periodicals. He was one of the most skilful gynecologic surgeons of Prague. He designed several instruments which are widely used in obstetrics. In spite of his teaching and clinical work, he found time for public activities. He was president of the Association of Czech Physicians, presided over the state health council of Czechoslovakia, was chairman of the gynecologic section of the Czechoslovak Surgical Association, and was head of the Association for Combating Malignant Growths and of the Association for the Protection of Mothers and Children. To the end of his life he kept up the study of foreign languages, which made it possible for him to maintain direct personal contact with many of his colleagues outside the country.

Marriages

JAMES PORTER COLLIER, Birmingham, Ala., to Miss Virginia Slade Lacey of Demopolis, in Mobile, July 8.

ROBERT CATHART KEYS, Brooklyn, to Miss Ernestine Blanche Rupp of Staten Island, N. Y., June 22.

EDGAR MURRAY BURNS, Madison, Wis., to Miss Alice Gertrude Douglas of North Bend, Ore., July 10.

JOHN MARION BANKHEAD, Silver Spring, Md., to Miss Eleanor Guy of Lowrys, S. C., June 7.

ALVA BROWN CRADDOCK to Miss Anne Hartley Luckett, both of Asheville, N. C., June 12.

CHRIS WALTER CULLNANE, Evansville, Ind., to Miss Lucile Pierce of Indianapolis, June 28.

JOSEPH B. BILDERBACK, to Miss Gwendolyn C. Johnston, both of Portland, Ore., May 27.

PORTER BEVAN BLANCHARD, Madison, Wis., to Miss Jeanette Sowle of Tomah, July 3.

VAUGHN RHEA ELEAZER, Chapin, S. C., to Miss Ella Dunn of Newberry, in June.

NORMAN DE NOSAQUO to Miss Anita Cohen, both of Milwaukee, June 25.

THOMAS LUTHER BYRD, Atlanta, Ga., to Miss Lillian Smith, June 8.

Deaths

William H. Mercur ☉ Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1883; fellow of the American College of Physicians; member of the American Climatological and Clinical Association and the Association for Research in Nervous and Mental Diseases; aged 72; died, July 16, of myocardial insufficiency.

John Metcalf Maury ☉ Memphis, Tenn.; University of Pennsylvania School of Medicine, Philadelphia, 1890; professor of gynecology, University of Tennessee College of Medicine; member of the Southern Surgical Association; fellow of the American College of Surgeons; on the staffs of the Memphis General and Baptist Memorial hospitals; aged 64; died, July 10, of heart disease.

James Wesley Wiltse ☉ Albany, N. Y.; Albany Medical College, 1891; formerly instructor and clinical professor of dermatology and genito-urinary diseases at his alma mater; past president, vice president and secretary of the Albany County Medical Society; since 1922 health officer of Albany; for many years on the staff of St. Peter's Hospital; aged 68; died, July 9.

Augustus V. Wendel ☉ Newark, N. J.; College of Physicians and Surgeons, Baltimore, 1888; on the staffs of St. James Hospital and the Hospital of St. Barnabas, Newark, and Alexian Brothers' Hospital, Elizabeth; aged 64; died, July 5, at his summer home in Spring Lake, of pneumonia.

Wyatt Heflin Blake, Sheffield, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1883; member and past president of the Medical Association of the State of Alabama; formerly on the staff of the Colbert County Hospital; aged 77; died, July 9, of cerebral hemorrhage.

Joseph L. Edwards, Brownsville, Tenn.; Memphis (Tenn.) Hospital Medical College, 1889; member of the Tennessee State Medical Association; secretary of the Haywood County Medical Society; formerly mayor of Brownsville; aged 69; died, July 7, of cerebral hemorrhage.

Howard Albertus Grube, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1891; veteran of the Spanish-American and World wars; aged 68; died, July 6, of cardiovascular renal disease, arteriosclerosis and diabetes mellitus.

Charles Andrew McLurkin, Chester, S. C.; Kentucky School of Medicine, Louisville, 1890; member of the South Carolina Medical Association; served during the World War; aged 66; died, July 2, of acute gastro-enteritis and nephritis.

Norman E. Benson, Albany, Ga.; Atlanta College of Physicians and Surgeons, 1903; member of the Medical Association of Georgia; aged 56; on the staff of the Phoebe Putney Memorial Hospital, where he died, July 4, of myocarditis.

Lloyd Bartmess Foster, Oklahoma City; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; aged 57; died, July 2, in the Oklahoma City General Hospital, of bronchopneumonia.

Rountree Wickliffe Wood, Cynthiana, Ky.; University of Louisville School of Medicine, 1903; member of the Kentucky State Medical Association; served during the World War; aged 60; died suddenly, July 4, of heart disease.

Dana Monroe Collier, Nashville, Tenn.; Birmingham (Ala.) Medical College, 1914; served during the World War, on the staff of the Veterans' Administration Hospital; aged 46; died suddenly, July 2, of bronchopneumonia.

Robert Burns, Jr. ☉ St. Louis; Washington University School of Medicine, St. Louis, 1901; fellow of the American College of Surgeons; served during the World War; aged 53; died, July 17, of a self-inflicted bullet wound.

William Hawthorne Mayne, Los Angeles; University of Southern California College of Medicine, 1900; member of the California Medical Association; aged 60; died, June 10, of carcinoma of the rectum and pyelonephritis.

William Angus White ☉ New York; University of the City of New York Medical Department, 1896; on the staff of the West Side Hospital and Dispensary; aged 59; died suddenly, July 16, of coronary thrombosis.

James L. Egerton, Hendersonville, N. C.; University of Maryland School of Medicine, Baltimore, 1877; member of the Medical Society of the State of North Carolina; aged 76; died, July 10, of cerebral hemorrhage.

Frederick Schavoir, St. Petersburg, Fla.; College of Physicians and Surgeons, Baltimore, 1887; member of the

Connecticut State Medical Society; aged 73; died, July 9, of diabetic gangrene and hypertension.

Cyrille Vermeren, Chicago; National Medical University, Chicago, 1898; Belgian consul general; was awarded the Cross of Officer of the Order of Leopold; aged 69; died, July 23, of carcinoma of the descending colon.

Van Henry Gwinn, Jacksonville, Fla.; University of Michigan Medical School, Ann Arbor, 1891; member of the Florida Medical Association; aged 64; was found dead in bed, July 8, of probable coronary thrombosis.

George Gillespie Dickson ☉ Los Angeles; Medical Department of the University of Southern California, Los Angeles, 1918; aged 46; died, June 25, of injuries received in an automobile accident.

Henry William Lyding ☉ New York; New York Homeopathic Medical College and Flower Hospital, 1913; on the staff of the New York Ophthalmic Hospital; aged 50; died suddenly, July 16, of heart disease.

William Davison Nettles, McKenzie, Ala.; University of Alabama School of Medicine, 1910; member of the Medical Association of the State of Alabama; aged 49; died suddenly, July 5, of heart disease.

James Hollowell, Parkersburg, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 59; died, July 5, of heart disease.

Harry Shirk Dissler, Denver, Pa.; Medico-Chirurgical College of Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania; aged 50; died, March 13, of rheumatic endocarditis.

Alonzo Willett Carr, Knoxville, Tenn.; Medical Department, University of Tennessee Medical Department, Nashville, 1890; aged 78; died, July 2, of cerebral hemorrhage and organic heart disease.

C. Ross Miller, Ogdensburg, N. Y.; Syracuse University College of Medicine, 1909; served during the World War; aged 48; died, July 5, in a sanatorium at Ray Brook, of tuberculosis.

Alexander Glenn Davis, Logan, Kan.; Northwestern Medical College, St. Joseph, Mo., 1891; member of the Kansas Medical Society; aged 63; died, May 22, of acute military tuberculosis.

Samuel Thomas Ferguson, Goffstown, N. H.; Medical School of Maine, Portland, 1897; member of the New Hampshire Medical Society; aged 64; died, April 24, of coronary thrombosis.

Nelson Drew Wells, Denver; State University of Iowa College of Medicine, Iowa City, 1907; served during the World War; aged 65; died, July 17, of disease of the prostate and bladder.

Manfred Plouding Woodfin, Ironton, Ohio; Howard University College of Medicine, Washington, D. C., 1912; aged 54; died, July 10, of hypostatic pneumonia and paralysis agitans.

Robert Locke McClure, Brownsburg, Ind.; Indiana University School of Medicine, Indianapolis, 1919; aged 39; died, July 13, in the Methodist Hospital, Indianapolis, of Hodgkin's disease.

William F. Sawhill ☉ Concordia, Kan.; Jefferson Medical College of Philadelphia, 1882; past president of the Kansas Medical Society; aged 77; died, May 23, of cerebral thrombosis.

William Baker Sisson, Kahoka, Mo.; Missouri Medical College, St. Louis, 1890; past president of the Clark County Medical Society; aged 73; died, June 24, of heart disease.

Charles H. S. Selinger, New York; Eclectic Medical College of the City of New York, 1905; served during the World War; aged 50; died, July 11, of poison, self-administered.

Samuel Tilden Gillispie, San Diego, Calif.; Rush Medical College, Chicago, 1900; member of the California Medical Association; aged 62; died, June 23, of coronary sclerosis.

Katherine Q. Holden Kromer, San Diego, Calif.; University of Michigan Medical School, Ann Arbor, 1889; aged 77; died, June 5, of diabetes mellitus and myocarditis.

John J. Sinnott, New York; University and Bellevue Hospital Medical College, 1899; aged 58; died, July 14, in the Portland (Pa.) Hospital, of cerebral hemorrhage.

Charles U. Hanna ☉ Zanesville, Ohio; Ohio Medical University, Columbus, 1895; on the staff of the Bethesda Hospital; aged 66; died, July 13, of angina pectoris.

Henry A. Schmidt, Milwaukee; Independent Medical College, Chicago, 1896; aged 68; died, July 14, of arteriosclerosis, chronic myocarditis and diabetes mellitus.

William Latane Lewis ☉ Kensington, Md.; University of Maryland School of Medicine, Baltimore, 1892; aged 73; died, July 12, of acute dilatation of the heart.

Francis Marion Laughlin, East Liverpool, Ohio; Western Reserve University Medical Department, Cleveland, 1881; aged 77; died, July 6, of chronic myocarditis.

Eva Furlow Collins, Cleveland; Homeopathic Hospital College, Cleveland, 1893; aged 70; died, July 8, of injuries received when struck by an automobile.

H. R. Ingram, Coleman, Ga.; Atlanta Medical College, 1895; member of the Medical Association of Georgia; aged 61; died, April 29, in a hospital at Cuthbert.

Eli T. Spencer, Los Angeles; Eclectic Medical Institute, Cincinnati, 1872; Civil War veteran; aged 85; died, June 27, of thrombosis of the coronary arteries.

Frank Raymond Dray ☉ San Francisco; Harvard University Medical School, Boston, 1898; aged 60; died, June 24, of coronary sclerosis and myocarditis.

Glenn H. Hardy, Canisteo, N. Y.; University of Buffalo School of Medicine, 1903; served during the World War; aged 58; died, July 12, of *tabes dorsalis*.

Emma Brooks Lewis, Santa Barbara, Calif.; Woman's Medical College of Pennsylvania, Philadelphia, 1874; aged 91; died, June 26, of pulmonary edema.

Florentine Peter Herman, Norwalk, Ohio; Eclectic Medical College, Cincinnati, 1922; served during the World War; aged 39; hanged himself, July 6.

Elliott W. Shipman ☉ Richmond Hill, N. Y.; University of Vermont College of Medicine, Burlington, 1885; aged 68; died, July 13, in Tolland, Mass.

Oscar Teeter, Amherstburg, Ont., Canada; University of Toronto Faculty of Medicine, 1891; formerly mayor of Amherstburg; aged 66; died, June 16.

Edwin Myron Weil, New York; College of Physicians and Surgeons, Baltimore, 1902; aged 62; died, July 12, of poison, self-administered.

Henry M. McHan, Fair Mount, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1901; aged 80; died, July 10, in Miami, Fla.

Granville Roy Norris, Burlington, Kan.; American Medical College, St. Louis, 1892; aged 66; died, May 31, of cerebral hemorrhage.

Christian P. Horn, Falls City, Ore.; National Homeopathic Medical College, Chicago, 1894; aged 70; died, July 5, of heart disease.

James B. Cox, Huntingdon, Tenn.; University of Tennessee Medical Department, 1878; aged 76; died, July 9, of arteriosclerosis.

Samuel Augusta Ellis, Tucson, Ariz.; College of Physicians and Surgeons of Chicago, 1886; aged 72; died, in May, of heart disease.

Raynor Woodhead ☉ Valley Falls, R. I.; Tufts College Medical School, Boston, 1898; aged 57; died, April 11, of heart disease.

Charles Wilson White, Birch Hills, Sask., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1922; aged 42; died, May 8.

William E. Lothridge ☉ Watervliet, N. Y.; Albany (N. Y.) Medical College, 1879; aged 78; died, July 10, of heart disease.

Joseph Howard Ogle, Garland, Texas; University of Tennessee Medical Department, Nashville, 1893; aged 72; died, June 20.

William McDowell, Anderson, Calif.; Cooper Medical College, San Francisco, 1901; aged 58; died, July 1, of carcinoma.

Horatio Seymour Joseph, Harlingen, Texas; Kentucky School of Medicine, Louisville, 1893; aged 65; died in June.

Clyde E. Sawyers, Centerville, Iowa; Rush Medical College, Chicago, 1894; aged 65; died, July 10, of myocarditis.

Edmund G. Thomas, Benton, Ky.; University of Louisville (Ky.) School of Medicine, 1873; aged 81; died, July 16.

Edwin Francis Lehman, Middletown, Pa.; Jefferson Medical College of Philadelphia, 1884; aged 69; died, June 4.

Leamington B. Stewart, Chesaning, Mich.; Toledo (Ohio) Medical College, 1884; aged 78; died, July 15.

Henry Clay Owen, Olathe, Kan.; Medical College of Ohio, Cincinnati, 1878; aged 88; died, June 7.

Jesse Crounse, Altamont, N. Y.; Albany Medical College, 1877; aged 81; died, June 29.

Bureau of Investigation

THE PLASTIC APPLIANCE INSTITUTE Another "Nose Adjuster" Fraud Debarred from the Mails

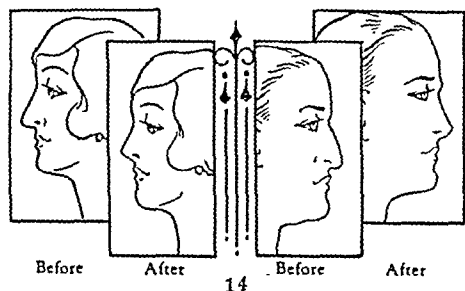
During the past few years there have been advertised devices that the public has been led to believe could, by wearing, be made to change the shape of the adult nose. The Post Office Department has already declared two of these concerns fraudulent and now reports another in the same class—the Plastic Appliance Institute. According to a report by the Chicago Better Business Bureau made in March, 1932, the Plastic Appliance Institute was a partnership affair organized in October, 1931, by Mr. Paul L. Bieles and Mr. K. Trilling. From the advertising matter it appeared that Mr. Bieles was the president, while one "Daniel T. Gaylord" was secretary. Later information brought out the fact that Gaylord was a fictitious person whose name was chosen for its euphonious sound. The

Velvex—the Preparing Cream

Velvex, the preparing cream used in conjunction with the SCULPTRON to hasten its action, is made in accordance with a well-defined formula. A highly trained chemist and a well known cosmetician developed this formula for this specific use.

**The SCULPTRON and Velvex
Equipment
COMPLETE
cost only**

\$6.00



Photographic facsimile from a page of the Plastic Appliance Institute's booklet: "A New Nose at Little Cost."

alleged institute was started in Chicago, but left that city and reopened in Sheboygan, Wis., where it continued to do business through the United States mails.

The Bieles device was called a "Sculptron," and it was advertised under the claim that there were "no confusing head tapes"—although there were—and that it was "automatic" in its adjustment—although it wasn't. The device itself was an affair of aluminum and felt. There came with it, of course, the inevitable mystery element, a "preparing cream" which was called "Velvex." The device itself is said to have cost about 40 cents. It was sold at first for \$6, the price being gradually lowered, as it became more difficult to find suckers, to \$5, then to \$4, and finally to \$2. Advertising booklets were sent out which might lead the gullible to believe that with the use of the Sculptron one could change the nose of a "King Kong" into the nasal pulchritude of a Clark Gable. Pictures in the booklet showed men and women with noses that bore bony humps, said humps disappearing after the use of the Sculptron and giving place to perfect Grecian profiles. Ladies with rather elongated and overhanging proboscides were changed by Mr. Bieles' device—if the pictures were to be believed—into

visions of loveliness, with the "tip-tilted" nose so well described by Tennyson in his "Idylls of the King." To quote from the booklet:

"It makes no difference what shape the fleshy contour of your nose may be, the Sculptron is designed to make it just as beautiful and straight as you desire."

On another page of the booklet someone, presumably Mr. Bieles, is shown in the position of a go-getter haranguing a meeting of salesmen, and under the picture is the statement: "The Sculptron Principle Is Endorsed by Doctors." We then read:

"Upon the rigid logic of rhinoplasticology (science of shaping the nose) are based the principles of the Sculptron."

"Foremost members of the medical profession endorse these principles in highest terms."

"The science of rhinoplastics is not in the experimental stage. It is firmly established, with a vast background of thrilling accomplishments."

There are testimonials, of course, one of the most remarkable being credited to a "Miss F. B., Memphis, Tenn.," who gushes her appreciation of the rapid work that the Sculptron will do in these words:

"After the second night of wearing the Sculptron, I simply can't keep from writing you of how thrilled I am. At the present rate, I think I am going to have a perfect nose in less than a week. Isn't that marvelous?"

In due time the postal authorities got around to the Plastic Appliance Institute, and on May 10 a memorandum of charges was furnished Mr. Bieles, who was called on to show cause why a fraud order should not be issued against the concern of which he was president. There was a hearing at which Mr. Bieles and his attorney appeared. It consumed slightly over half a day. Following the noon recess, Mr. Bieles' attorney is reported to have stated that on the basis of the evidence adduced during the morning session, no further defense would be offered, and it would be stipulated on the record that a fraud order should be issued forthwith.

Mr. Karl A. Crowley, Solicitor for the Post Office Department, in his memorandum to the Postmaster-General recommending the issuance of a fraud order, brought out the fact that Mr. Bieles himself had admitted at the hearing that his device had been worn by Mrs. Bieles over a period of several months without producing any material or lasting change in the shape of her nose! It was further brought out that Bieles inaugurated his scheme after observing other enterprises of a similar character, particularly the one against which a fraud order had been issued by the postal authorities. Bieles himself was wholly without medical training.

Following the recommendation of Judge Crowley, Postmaster-General James A. Farley on June 8, 1933, issued a fraud order against the Plastic Appliance Institute and its officers and agents as such at Chicago, Ill., and Sheboygan, Wis.

Correspondence

USE OF A STANDARD CLASSIFIED NOMENCLATURE OF DISEASE

To the Editor:—Recently there has been published a new classified nomenclature of disease. This was prepared under the supervision of physicians representing practically all the national medical organizations of the United States, and so is both authoritative and generally acceptable. It is the last word in nomenclature. But why, it may be said, is there a need for a classified nomenclature of disease? What use is it?

Without some such book of nomenclature, a patient's disease may be recorded as one of several diagnoses. This brings confusion when an attempt is made to gather together from a personal or a hospital file a group of cases of the same disease, for one does not know where to look for all of them among the index cards. One member of the staff uses a given diagnosis, another a different one. The same patient returning for several admissions, always having the same disease, may be filed under different diagnoses, if there is not uniformity in

nomenclature. Statistics are difficult to gather under these conditions. Especially is this true when an attempt is made to compare statistics from different hospitals. The use of a generally accepted nomenclature of disease remedies all this.

When a physician has studied a patient, he wishes to express the results in terms of diagnoses. He knows what ails the patient but may not know the accepted names for the conditions found. A book of nomenclature aids greatly in selecting names that will be generally understood. Especially is such a book useful to those assigned the task of entering diagnoses on histories of discharged patients.

Almost every hospital uses some form of list of diagnoses, but up to now there has been no single one authoritative for the entire country. This is furnished by this new book of nomenclature of disease. It would be a distinct advantage to medicine if every hospital used the same nomenclature, as is made possible by this book.

The more widely such a book is used, the more useful it becomes. So all hospitals are being urged to adopt it. Its use is far simpler than at first glance one would think. It was adopted, February 1, at the Peter Bent Brigham Hospital, and soon its use was running smoothly and the house officers were having little difficulty in finding the proper diagnostic terms. Why not put it into use in every hospital? Those who want to find out about it may write to the National Conference on Nomenclature of Disease, 2 East One Hundred and Third Street, New York City.

HENRY A. CHRISTIAN, M.D.,
Peter Bent Brigham Hospital,
Boston.

[NOTE.—This book, "A Standard Classified Nomenclature of Disease," was officially approved by the House of Delegates of the American Medical Association. A review appeared in THE JOURNAL, May 27, page 1717.—ED.]

"FORCED DRAINAGE OF THE CEREBROSPINAL FLUID"

To the Editor:—In THE JOURNAL, July 29, an article by Drs. Kubie and Retan describes with meticulous detail the newest procedure for dealing with infections of the central nervous system. This in principle and effect is "lavage" of the perivascular and perineuronal spaces of the cerebrospinal parenchyma, which is induced by the introduction of large amounts of hypotonic salt solution into the circulation, and, as the result of differences in osmotic tension thus created, a large amount of this fluid ultimately finds its way into the ventriculo-subarachnoid spaces of the brain and cord. It is then drained off through a lumbar interspace, with a lumbar puncture needle. The conception and execution of the therapeutic procedures is, as far as I am aware, original with the authors; and they deserve commendation for this notable contribution to the therapy of infections of the central nervous system.

I have had the opportunity to make use of forced drainage in a small number of cases, and I can well testify to the physiologic response and therapeutic efficacy of the procedure. I have not, however, followed the technical details so clearly outlined by the authors but have resorted to the simpler procedure of injecting into the vein a quart of hypotonic salt solution (0.45 per cent) and, after this is completed, lumbar puncture is done and all the fluid is drained away from the lumbar subarachnoid spaces. This is repeated every eight hours as a routine measure. I can confirm the marked increase in the amount of cerebrospinal fluid noted after the hypotonic injections have been started and the gradual change in the cytology of the fluid. This is a most striking phenomenon—particularly the ability to create artificially a large reservoir of cerebrospinal fluid which "washes" away purulent material and dilutes toxic debris and renders it harmless. It is more than probable

that as a result of the use of this procedure the purulent exudates so common in infections of the central nervous system, which compromised important nerve structures, and which were with difficulty removed through a lumbar puncture needle, will no longer be seen.

My purpose in modifying the procedure of Drs. Kubie and Retan was to obviate the danger of infection of the soft tissues adjacent to the permanently placed lumbar puncture needle and the greater risk of infecting the spinal meninges. The method of injecting a massive dose of hypotonic saline solution intravenously, to be followed by thorough lumbar drainage, as one procedure, is simpler, just as effective, and can be carried out by the intern staff. I have seen no increase in symptoms nor other untoward phenomena as a result of this method of forced drainage.

My experience with this method has been limited to suppurative infections of the central nervous system, of both the meningococcic and the streptococcic variety. The former patients recovered and the latter succumbed. As a result of forced drainage, it was observed that the meningococcic patients recovered rapidly and that the streptococcic patients lasted a much longer time than has been the experience of most physicians.

CHARLES ROSENHECK, M.D., New York.

"MALARIA TRANSMITTED BY HYPODERMIC NEEDLE"

To the Editor:—The communication of Dr. Nathan Flaxman (THE JOURNAL, July 8, p. 157) appears to have been an attempt at refutation of the points I established in my communication (THE JOURNAL, June 10, p. 1882). My purpose was to furnish information based on fact, not to engage in polemics.

In my article I admitted and emphasized infectibility by needle but contended that the premises did not justify the conclusion. Dr. Nickum was mistaken in assuming that a person infected with *Plasmodium vivax* could be reinfected by a needle contaminated with the homologous strain. Furthermore, a three-day period of incubation of tertian malaria in his case is out of the question, since the pyretogenic minimum is accepted as being fifty parasites per cubic millimeter and the total volume of blood in an adult is around five million cubic millimeters. It is possible for a contaminative pyretogenic agent to have broken the patient's resistance to his own infection, if malaria was in evidence. But that is another story.

WILLIAM KRAUSS, M.D., Meridian, Miss.

ANEMIA IN KOREA

To the Editor:—In his article on anemias (THE JOURNAL, April 29, p. 1303), Ottenberg calls attention to the observation that has been made regarding the relationship of copper to the anemias. He also calls attention to the very minute quantities of copper required.

During a period of nine years' practice in Korea, the last three of which have been entirely in internal medicine in a hospital with an attendance of 50,000 patients yearly in the outpatient department, it has not been possible to make the diagnosis of pernicious anemia or sprue in a single instance. I do not wish to create the impression that pernicious anemia does not occur in Korea, but of more than 3,000 patients examined personally and in whom complete blood studies were made it has not been possible to confirm a diagnosis of pernicious anemia.

There are two other facts of at least passing interest in this connection. First, the Korean diet, in addition to rice, is made up largely of green leafy vegetables of various sorts and, when the Korean is able to secure meat, the liver, stomach, intestines, lungs and heart are considered the choice portions. For those who are ill, every effort is made to secure stomach, intestines

and liver. These are usually prepared and eaten whole. Second, practically all Korean food is served in brass dishes and eaten with brass spoons or chop-sticks. The use of brass is a matter of ancient custom and there is a definite idea among Koreans that the brass dish and spoon have a definite value in preserving health.

There is a striking parallel between the recent advances in the study of the anemias and the simple observations of ancient customs in Korea.

ZACHARIAS BERCOVITZ, M.D.,
Pyongyang Union Christian Hospital,
Pyongyang, Chosen (Korea).

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VITAMINS IN VARIOUS COD LIVER OILS

To the Editor:—A number of my patients are finding it expensive to give cod liver oil to all their children. I have been attempting to compare the vitamin content of different oils. The difference in the D units makes this comparison difficult. New and Nonofficial Remedies has made the Steenbock unit more or less standard. Can you tell me the value of the following units in Steenbock units: (1) The McCollum, Simmonds, Shipley and Park. (2) Patch (Holmes) system. (3) Nason's oil. (4) American Drug Manufacturers Association. (5) The cod liver oil coefficient of Bills (Mead Company). Also can you tell me the specific gravity of average cod liver oil; of 250 D viosterol in oil, of haliver oil plain and with viosterol so that I can figure the vitamin content into liquid units as given to patients when it is stated in gram units? This is rather a big order but it will help to clear a confusing situation. One other question: According to Bills and his co-workers, in the *Journal of Biological Chemistry*, average cod liver oil has a vitamin D content of 40 Steenbock units.

HERBERT C. SOULE, M.D., Rochester, N. Y.

ANSWER.—One may sympathize with the correspondent in the difficulties that he is experiencing in his attempts to correlate the vitamin potency of different cod liver oil preparations, which are at present marketed with a considerable variety of unitage usages as well as differences in actual vitamin potency. In explanation of the situation, it should be recalled that knowledge of the nature of the antirachitic value of cod liver oil and other products containing vitamin D is of comparatively recent origin. It happens that investigators in many parts of the world have been engaged in the study of this unique property in the control of avitaminosis. Pioneers in various places have used different methods of estimation; as a consequence, the numerical values that have been reported in the literature and otherwise proclaimed are naturally confusing to all except expert students of the subject. On this account, there has been within recent times a concerted effort to adopt a universal system of unitage precisely as there have been efforts for many years to make the metric system of measurement universal in its application throughout the world. Through the initiative of a subcommittee of the Health Organization of the League of Nations, international "units" have finally been adopted. In this country, through the initiative of the Vitamin Standardization Committee of the United States Pharmacopeia XI, which is presently to be issued, an effort has been made to secure the adoption of these international units. Furthermore, under the same auspices, a movement is under way to prepare official standards in the form of analyzed cod liver oil that can be distributed to analysts everywhere at a reasonable price. These standard samples will be labeled with respect to their potency in vitamins D and A so that they can be used for comparisons by any individual or firm. We understand that they will be supplied, when ready, through Dr. E. Fullerton Cook, chairman of the Standardization Committee of the United States Pharmacopeia, Forty-Third Street and Woodland Avenue, Philadelphia. The date after which these standards will be available will be announced to the public in due season.

Meanwhile, it will be necessary for those interested to be tolerant with reference to the confusion. It is scarcely greater than that which is still encountered in medicine through the haphazard prescription of cubic centimeters, milliliters, drachms, ounces and grains.

Referring specifically to the inquiry:

1. We are not aware of any specific McCollum, Simmonds, Shipley and Park "unit" which can be translated into terms of other familiar units. The investigators referred to devised a

technic—the so-called line test—for determining the degree of healing of experimental rickets under the influence of varying doses of antirachitic substances.

2. The Patch (Holmes) system has become obsolete. According to Bills, Honeywell, Wirick and Nussmeier (*J. Biol. Chem.* 90:619 [Feb.] 1931), 26,500 units of the Patch (Holmes) system are equal to 4,000 Steenbock units. Therefore 6.6 Patch (Holmes) system units are equal to 1 Steenbock unit. In New and Nonofficial Remedies, 1933, page 428, the Steenbock rat unit is defined "as the total amount of vitamin D necessary to produce a narrow and continuous line of calcium deposits in the metaphyses of the distal ends of the radii and ulnae of standard rachitic rats under standard feeding conditions." Viosterol in oil is standardized by comparison with a potent cod liver oil containing, in each 75 mg., 1 rat unit (Steenbock) of vitamin D. Each gram (1,000 mg.) of a potent cod liver oil therefore contains $1,000 \div 75$, or 13.33 Steenbock units. The American Drug Manufacturers Association's rat unit (*J. Am. Pharm. A.* 21:598 [June] 1932) is the minimum average daily amount in milligrams of cod liver oil required to produce the same kind and degree of healing as referred to in the definition of the Steenbock unit.

3. Nason's Palatable Cod Liver Oil, according to New and Nonofficial Remedies, 1933, page 273, has "an antirachitic potency of not less than 150 units per gram." The 150 units referred to are A. D. M. A. units, which are equivalent to 15 Steenbock units.

4. The American Drug Manufacturers Association's units have already been referred to in paragraph 2. Ten A. D. M. A. units are equal to one Steenbock unit.

5. According to Bills, Honeywell, Wirick and Nussmeier, a Cod Liver Oil Coefficient of 100 equals 4,000 Steenbock units of vitamin D per gram.

The specific gravity of the average cod liver oil is 0.92. The specific gravity of the other mentioned products—Viosterol in Oil 250 D, Haliver Oil Plain and with Viosterol—is approximately the same.

The statement of the correspondent that, "according to Bills and his co-workers, in the *Journal of Biological Chemistry*, average cod liver oil has a vitamin D content of 40 Steenbock units," has not been discovered. The potency of average cod liver oil is defined by Bills and his co-workers as that which induces a certain amount of healing (*J. Biol. Chem.* 90:616, 1931); these authors do not express activity in unitage, in fact, they state that they "have refrained from expressing potency in terms of units per quantity of material (op. cit., p. 636).

As soon as the United States Pharmacopeia XI proposed new units have become official, it is to be presumed that they will be included in subsequent editions of New and Nonofficial Remedies and probably be introduced generally in the notations of the drug trade.

INDURATION OF CORPORA CAVERNOSA

To the Editor:—I have under observation a man, aged 57, who came to me with the complaint of finding a hard mass in the body of the penis. He complains that penile erection is painful because of the tendency of the erect penis to bend upward at the point where the mass is localized. There is no history of gonorrhea or syphilis. The mass is not painful and not tender. There is no interference with micturition. The urinary stream starts easily. There is no hematuria or pyuria and no frequency. The prostate is not enlarged. The mass is situated about one-half inch behind the corona of the glans and is very hard, sharply defined, about one-eighth inch thick by one-half inch square. It is located in the corpus spongiosum and is freely movable in that body. There is no inguinal glandular adenopathy. The patient became aware of his condition two months ago and since then has noticed no change in size or shape of the plaque. I have read somewhere of a penile condition wherein the corpus spongiosum becomes infiltrated with patches of fibrous tissue. I would appreciate the name of the condition, treatment and prognosis.

M.D., New York.

ANSWER.—This condition is rather uncommon and is known under various names, the most common of which are "fibrous cavernositis" or "induration of the corpora cavernosa." There is nothing dangerous about the condition and it has never been known to undergo malignant degeneration. It never interferes with urination, but its most serious aspect is that it causes a curvature of the penis during erection or in some other way mechanically interferes with complete erection and so is a serious bar to normal intercourse. The prognosis is bad and even if the growth is removed by surgical operation a recurrence is the rule. The condition must be and easily is differentiated from such condition as carcinoma, dorsal phlebitis, gouty tophi and gummas, for the latter of which a Wassermann test should be made. There have been various treatments suggested and once in a while a cure is brought about by any of these methods. Internally, large doses of arsenic, mercury and the iodides have been given with but indifferent success, though they may be given a trial before more strenuous methods are undertaken.

The same may be said of removing all sources of infection from the teeth, tonsils and prostate. Locally, massage, electrolysis, galvanization, ionization, radium and x-rays have been tried with little or no success. Local applications of pastes containing various drugs, such as iodine, mercury, camphor and iodoform, have also been discarded as of no avail. Surgical excision has given the greatest number of cures in expert hands, but even here the results are poor. Almost nothing is known of the cause of the condition and, as a rule, there is little tendency to extension after the growth has fully developed.

APHTHOUS STOMATITIS

To the Editor:—I realize how difficult it is to make a diagnosis when one actually sees the patient, much more so when the information in the case is second-hand. However, I wish your opinion on a case: A widow, aged 39, with four children living and one who died of pneumonia, has suffered with ulcers of the mouth for several years. When I first observed her, some five years ago, she had badly decayed teeth, beyond repair. I advised her to have the old snags removed and a new set made, and that I thought the ulcers would disappear. She complied with this advice and she still has ulcers. Her family history is negative and also her past history. She has always been healthy, except that some four years ago she had a slight erosion of the cervix, which cleared up under the electrical cautery. Repeated Wassermann tests have been negative, as is urinalysis. There is no history of indigestion and she usually does not suffer from constipation. Her husband died of organic heart disease about five years ago. Her throat is clean and she is particular about keeping her mouth and teeth clean, but at times her tongue is coated. These ulcers begin as little bumps and after a day or two the point of the bump sloughs off and the ulcer remains for from ten days to three weeks and then heals perfectly. She seldom has more than two ulcers at the same time and sometimes there are intervals of from three to six weeks that she is exempt from them. When the ulcer disappears, no scar is left. These ulcers occur on the tongue and any part of the mucous membrane of the mouth, except the roof of the mouth. I have prescribed alkalis, brewers' yeast and cod liver oil, and none do any good. If you could offer me a suggestion from this description I would appreciate it. Please omit name.

M.D., Florida.

ANSWER.—This description corresponds in all respects but one (anemia) with the "chronic recurrent aphthous stomatitis" of von Mikulicz (von Mikulicz and Kümmel: *Krankheiten des Mundes*, ed. 3, p. 71). The condition is quite rare and occurs as a rule in anemic women between 20 and 40 years of age. As this author says, "this condition is influenced neither by therapy directed at the anemia nor by any sort of local treatment." However, some temporary relief of the local conditions, especially the pain, may follow the use of the silver nitrate pencil applied superficially.

"TETRALOGY OF FALLOT"—MÖNCKEBERG'S DISEASE

To the Editor:—1. In a recent issue of the *New England Journal of Medicine* the statement was made that "the heart lesion was diagnosed as the tetralogy of Fallot." What is the tetralogy of Fallot? 2. How does Mönckeberg's disease differ pathologically and clinically from arteriosclerosis and from thrombo-angiitis obliterans? Please omit name.

M.D., Massachusetts.

ANSWER.—1. The tetralogy of Fallot is the most frequent combination of cardiac defects found in adults of the cyanosed group of patients suffering from congenital heart disease. It consists of the following four cardiac defects: stenosis of the pulmonary artery, interventricular septal defect, deviation of the origin of the aorta to the right, and hypertrophy of the right ventricle. These patients also show other clinical features of congenital heart disease, such as a compensatory polycythemia, increased amount of hemoglobin in the blood, clubbing of the fingers and toes and cyanosis. The pathogenesis of this combination of defects has been explained by Fallot and further elaborated by Maude Abbott as being secondary to the pulmonary stenosis allowing for a shunting of some of the blood through the heart to the systemic circulation.

2. There is still some difference of opinion regarding the subdivision of arteriosclerosis into Mönckeberg's sclerosis and atherosclerosis. Although pathologically the two types differ markedly, some authors consider that Mönckeberg's sclerosis and atherosclerosis are only different manifestations of the same process operating in different types of vessels. Mönckeberg's sclerosis is a medial sclerosis, which affects vessels with well developed muscular coats, such as the femoral, popliteal and radial, just above the wrist. This last type of sclerosis is responsible for the pipe stem radials and tortuous temporals but does not as a rule decrease the size of the lumen of the affected vessels unless there is a superimposed atherosclerosis of the intima. It occurs particularly in elderly persons and may be considered a senile degenerative change. Deposits of lime salts in the media form the principal feature and make the vessels hard and brittle. The deposits are patchy and may encircle the vessel so that it presents a series of rings, or they

may fuse together to form a hard tube like the stem of a pipe. Histologically the muscle fibers show fatty changes, fragmentation and lime deposits.

On the other hand, atherosclerosis has been adopted to signify the ordinary nonsyphilitic decadent lesion of the intima, which occurs in the larger and smaller vessels or vessels with well developed intima. From this discussion it is seen that Mönckeberg's sclerosis is merely a form of arteriosclerosis that occurs in vessels with well developed muscular walls.

In further answer to the questions, Mönckeberg's sclerosis does not differ from arteriosclerosis, of which it is a part, though it does differ in certain respects from atherosclerosis. For more detailed discussion of this subject the reader is referred to "Diseases of the Arteries Including Angina Pectoris," by Sir Clifford Allbutt.

Regarding the difference between Mönckeberg's sclerosis and thrombo-angiitis obliterans, one can say that Mönckeberg's sclerosis is essentially an involvement of the media of certain vessels as a result of degenerative changes and does not in itself lead to occlusion, while thrombo-angiitis obliterans is chiefly an intimal involvement of the vessels of the legs and arms leading to occlusion. Further, the process is considered to be due to an infective process or to some unknown toxin.

Clinically, Mönckeberg's sclerosis differs from thrombo-angiitis obliterans in that the latter disease appears earlier in life, there is marked pain, and there is an obliterative process leading to gangrene. In Mönckeberg's sclerosis there may be a superimposed atherosclerosis of the intima, which may lead to gangrene such as seen in diabetic and senile gangrene.

POSSIBLE GERMAN MEASLES

To the Editor:—During the last two weeks I have been seeing many children with a maculopapular rash, which at first is discrete and rather blotchy in appearance and rapidly spreads over the body, becoming confluent in places. It usually begins on the extensor surfaces of the arms and about the neck but not on the face. Some children have a marked flushing of the face, with pallor about the mouth. The rash itself is a purple-pink. The children do not complain of illness, the temperature is normal or slightly above, sometimes the conjunctiva is injected, and occasionally there is a little redness of the throat; but none have complained of sore throat or coryza. The occipital and posterior cervical glands are not swollen. The rash clears up in from three to seven days. No desquamation has been noted. Some cases have been diagnosed as a rash due to sensitization to foods but it is distinctly contagious. I shall be thankful for any help you can give me in clearing up the diagnosis. Please omit name.

M.D. Indiana.

ANSWER.—It is impossible to state certainly what the condition described may be. The general picture strongly suggests German measles. Scarlet fever of a mild type could be excluded by an absence of hemolyzing streptococci in the throat. The absence of Koplik's spots is against measles. Mild cases of measles may be difficult to differentiate from cases of German measles, but in the former disease one expects more catarrhal symptoms at the onset. If the prevalent disease occurs in those who have previously had measles, the diagnosis of German measles is more certain. Dukes' or the fourth disease is of such questionable standing that it is not profitable to consider it in this connection.

MIRROR WRITING

To the Editor:—A school boy, aged 6 years, of excellent family, is normal in every way except for a visual abnormality. He visualizes everything exactly as a normal person would if looking in a mirror. Visual acuity is normal. For example, if shown the printed word Frank he would copy it, starting with the F and make it backward, starting on the right side of the paper. Also in copying pictures he will make them backward. What is the source, treatment and prognosis of this condition?

CHARLES T. GRATTIDGE, M.D., Laurelville, Ohio.

ANSWER.—This boy is undoubtedly what is known as a mirror writer. The knowledge of the source of this condition is entirely hypothetical at present but there are many factors which would lead one to believe that such a condition is due to a disturbance in the control centers of the brain as they influence laterality. The majority of these children are sinistrals in that the dominant eye is the left eye and the dominant arm and hand are of the left side. For some unknown reason, the interpretation of the word memory area in the brain does not entirely coincide with this laterality. Evidence has been brought forward to show that attempts to change the handedness of children who show preference for the left side causes great disturbance. Many of these children become stutterers; others are mirror writers.

Treatment consists in personally concentrated emphasis concerning the letters of the alphabet in their correct position and also in their relation to one another. The auditory memory center is an added adjunct in the training, in that the letters are repeated out loud.

The prognosis is excellent under proper tutelage. A detailed system of training has been outlined in the book "Children Who Cannot Read," by Marian Monroe, University of Chicago Press, 1932. Other references that may help in understanding this condition are:

- Orton, S. T.: Specific Reading Disability—Strephosymbolia, *THE JOURNAL*, April 7, 1928, p. 1095.
Mayer, L. L.: Congenital Reading Disability—Strephosymbolia, *THE JOURNAL*, April 15, 1933, p. 1152.

POISONING WITH BARIUM CARBONATE

To the Editor:—A man, about 36 years of age, had a diagnosis of gastric ulcer about a year ago and entered a hospital, where he was given a Sippy diet and received treatment with powders. He had a gastric discomfort for months. October 22, 1932, he became ill shortly after taking some powders. He was seized with vomiting, there was paresthesia of both arms, and there were decreased generalized reflexes. There was no history or evidence of infection with *Bacillus botulinus*. The powder which he was supposed to have taken contained 10 grains of calcium carbonate and 30 grains of sodium bicarbonate and measured approximately one-half teaspoon. Subsequent examination of this powder revealed that it contained 21.51 per cent of barium carbonate, a poisonous salt. I might state that during the course of his attack he was confined to the hospital. A physician made a diagnosis of toxic angioneurotic edema.

1. What treatment should be given in such a type of case with a history of ingestion of barium carbonate of this concentration?
2. What is the probable length of disability?
3. Was the dose obtained in this powder sufficient to produce the symptoms of which the patient complained?
4. Will there be any permanent effect of the alleged poisoning?
5. Is there any danger of recurrence of the condition without taking the same type of drugs?
6. What symptoms might be expected with such a history?
7. What is the prognosis as to the eventual cure?
8. What was the dose of barium carbonate that the patient took, assuming that he was given half a teaspoonful of a powder supposed to contain 10 grains of calcium carbonate and 30 grains of sodium bicarbonate, but which in reality contained 21.51 per cent barium carbonate?

D. R. McLEAN, M.D., Chicago.

ANSWER.—1. Probably the best chemical antidote is a soluble sulphate, as magnesium sulphate or sodium sulphate, to precipitate the insoluble barium sulphate. This should be followed by gastric lavage with milk and water. Heat should be applied to the body and the cardiac depression treated by stimulants as the symptoms arise. The abdominal pain and marked slowing of the pulse may require the administration of atropine.

2. The probable length of disability varies with the dose ingested.

3. The dose in this instance probably is sufficient to cause the symptoms.

4. There are apparently no permanent effects to be expected in this instance.

5. If the etiology of this patient's condition is correct, one can be assured of no recurrence without the intake of barium.

6. The symptoms of barium poisoning vary with the dose and include salivation, nausea, vomiting, severe epigastric pain and diarrhea. The patient is cold and the skin is cold. There may be severe cramps in the different groups of muscles, about one half of the cases showing convulsions and the other half paralysis, while general muscular weakness is common. The pulse in some cases is small and irregular and intermittent, while in others it shows a digitalis-like action and is slow and full. The blood pressure may be increased and the patient may complain of cardiac palpitation. There may be vertigo, ringing in the ears and disturbances of vision and speech. Collapse and death may come suddenly, associated with general convulsions and failure of respirations.

7. With the small dose ingested, cure should be complete.

8. Between 7 and 8½ grains.

ASCHHEIM-ZONDEK AND ALLEN-DOISY UNITS

To the Editor:—Please compare the relative potency of the Aschheim-Zondek mouse unit and the Allen-Doisy rat unit. Please omit name. M.D., Kansas.

ANSWER.—The Aschheim-Zondek test and the Allen-Doisy assay do not measure the same thing and therefore they are not directly comparable. The Aschheim-Zondek mouse unit refers to the amount of "Prolan" (anterior pituitary-like factor) which can produce a definite reaction in the ovarian follicles. The Allen-Doisy rat unit determines the amount of estrogenic substance which can produce estrus in castrated rats. A number of workers have used mice for the Allen-Doisy assay; there is little agreement as to the relative values of the rat unit and the mouse unit of estrogenic substance (commercially: theelin, theolol, Amniotin, and so on). For the aqueous solutions the ratios in the literature vary from 10:1 to 2:1; generally four mouse units are taken as equal to one rat unit.

ALOPECIA AREATA

To the Editor:—A woman, aged 32 was operated on in 1927 for acute appendicitis, at which time no pathologic conditions were found in the pelvis. One month after the operation a bald spot appeared on the back of her head and by the end of the second month after operation she had a generalized and total alopecia involving all parts of her body. This condition has persisted to date. She has been seen by several physicians and following treatment a scanty amount of hair appeared on the head, which was transitory in appearance. Treatment by these physicians consisted of thyro-ovarian tablets, one three times a day, and later the use of a "patent medicine," an ointment called Anti-Pelaid. Some hair appeared on the head, which persisted while treatment continued but disappeared when this was stopped. In disappearing, it seemed to fall out by the roots. The patient has had regular periods with a moderate amount of flow, the periods lasting five days on an average. There has been a slight dysmenorrhea with the periods. There is no loss of sexual impulse, and on pelvic examination the female organs are apparently negative. The patient was pregnant once, in 1926, but this pregnancy terminated at four months as a miscarriage. The patient at present time is in apparent good health, is 5 feet 2 inches (157.5 cm.) in height, and weighs about 126 pounds (57 Kg.). The breasts are developed but small. She is a decided blonde, with a passive temperament, and is not nervous. She came to me requesting treatment for the generalized alopecia. She has had one roentgenogram taken in her life and has received no radium or ultraviolet treatments for this trouble. What in the way of treatment would be advisable? Is it possible to restore this woman's hair to her? M.D., Washington.

ANSWER.—This is undoubtedly a case of alopecia areata which has become generalized. It is possible that hair may regrow even after so long an interval; but the probability is slight. Every effort should be made, however. The patient should be put on a high vitamin diet and in every way kept at the highest possible plane of health. If she wears a wig, it should be left off whenever possible. Ultraviolet exposures sufficient to cause a marked erythema should be given over limited portions of the scalp, to avoid the distress of a severe general actinic dermatitis. If a severe reaction occurs, it does no harm but is beneficial, and soothing applications may be made as required. As soon as the signs of dermatitis have disappeared, another treatment should be given. When the scalp has become so resistant to ultraviolet radiation that the length of exposures required for a reaction becomes burdensome, change should be made to alcoholic dilutions of cresolic acids, beginning with 30 per cent and increasing as necessary for a reaction. If this wears out, phenol diluted with glycerin, or chrysarobin may be used. The latter should be dissolved in chloroform, from 2 to 12 per cent, painted on the scalp and covered when dry with flexible collodion. Every precaution should be used against getting it on the face, particularly near the eyes. During the application of any of these chemicals it is advisable to watch the urine at weekly intervals for signs of kidney irritation.

If hair begins to grow, the treatment should be continued for some time thereafter. A basic metabolism test should be made and, if low, appropriate doses of thyroid extract should be given. Extract of the anterior lobe of the pituitary gland, given hypodermically over a long period, has been reported to aid regrowth of hair (Bengtson, B. N.: Pituitary Treatment of Alopecia, *THE JOURNAL*, Nov. 7, 1931, p. 1355).

USE OF HEXYLRESORCINOL AS ANTHELMINTIC

To the Editor:—In *THE JOURNAL*, July 23, 1932, there appeared an article on the use of hexylresorcinol as an anthelmintic. What dose is used by the authors, and over how long a period of time was it administered? Please omit name and address. M.D., Colorado.

ANSWER.—A satisfactory dose is 0.1 Gm. for each year of age up to 1 Gm., which is sufficient for adults. With such single doses, 75 per cent of cures and at least a 90 per cent reduction in the egg count have been obtained in ascariasis. In hookworm infestation there is approximately 75 per cent reduction in egg count and a 40 to 50 per cent reduction in trichuriasis.

Almost all ascarids can be removed with single doses of hexylresorcinol if precautions are taken to see that it is given on an empty stomach and that food is not taken for four or five hours after treatment. These precautions are of more importance than larger or repeated doses. In very young children with a high worm burden, it may be well to repeat the dose of hexylresorcinol on the next day, as the small dose is entirely out of proportion to the number of worms present compared with the conditions found in adults. A purge is not necessary, but 15 Gm. of magnesium sulphate has been given to adults twenty-four hours after hexylresorcinol as a routine. Children have been given smaller doses.

Hexylresorcinol is not as effective against hookworm as against ascariis infestation. Only a few reports have been received from the treatment of infestation with *Ancylostoma*

duodenale, and some of these have shown less satisfactory results.

Excellent results have been obtained in pinworm infestations by a combined treatment of oral and rectal administration of hexylresorcinol. The following treatment is suggested in this condition: Treat twice a week in the morning as follows: (a) Omit breakfast; no food until noon. (b) Hexylresorcinol pills orally, early in the morning 0.1 Gm. for each year of age up to 10 years of age; maximum dose after this age, 1 Gm. Drink plenty of water. (c) Soapsuds enema and after its evacuation an enema of 1 part crystalline hexylresorcinol in 1,000 cc. of water; this enema to be given high and retained five minutes. (d) Bed sheets and underclothes to be boiled at least twice weekly to destroy eggs or worms passed on them. (e) Children's hands and nails should be rigidly inspected and cleaned after they have used the toilet.

Hexylresorcinol is of value in the treatment of these helminth infestations. It is theoretically a safe substance to take and has been found to be so in some thousands of infectious cases. It has now been given in more than 8,000 cases of helminth infestations with no reported case of any complications, except an occasional slight temporary gastric irritation. It can be given easily in crystalline form in hard, gelatin capsules or in sugar coated pills. As hexylresorcinol reacts with gelatin after a time, these capsules are not practical except for immediate use. The pills, however, are stable and effective. If administrations are left to the patients or the parents of children, it is found that the patients often chew up the capsules or pills and obtain a phenol "burn" of the mouth, which causes whitening of the mucous membrane, anesthesia of the tongue and loss of taste for several days. On account of this complication when hexylresorcinol is not properly administered, this substance has been withdrawn from the market by the manufacturers until a more suitable form of administration can be devised. Such "burns" are due to faulty administration and should not affect its proper use any more than local irritation from improperly injected intravenous substances should prohibit their use.

Following are references to articles on the subject:

- Lamson, P. D.; Brown, H. W.; Robbins, B. H., and Ward, Charlotte B.: Field Treatments of Ascariasis, Ancylostomiasis and Trichuriasis with Hexylresorcinol, *Am. J. Hyg.* 13: 803 (May) 1931.
Lamson, P. D.; Ward, Charlotte B., and Brown, H. W.: An Effective Ascariocide—Hexylresorcinol, *Proc. Soc. Exper. Biol. & Med.* 27: 1017 (June) 1930.
Lamson, P. D.; Brown, H. W.; Ward, Charlotte B., and Robbins, B. H.: Hexylresorcinol in the Treatment of Hookworm Disease, *Proc. Soc. Exper. Biol. & Med.* 28: 191 (Nov.) 1930.
Lamson, P. D.; Caldwell, E. L.; Brown, H. W., and Ward, Charlotte B.: Hexylresorcinol in the Treatment of Human Ascariasis, *Am. J. Hyg.* 13: 568 (March) 1931; A Comparison of the Anthelmintic Properties of Hexylresorcinol and Heptylresorcinol, *ibid.* 15: 306 (Jan.) 1932.
Brown, H. W.: The Treatment of Ascariasis and Trichuriasis with Hexylresorcinol Pills, *Am. J. Hyg.* 16: 602 (Oct.) 1932.
Brown, H. W.: Treatment of Pinworm (Enterobius Vermicularis) Infestation with Hexylresorcinol, *Proc. Soc. Exper. Biol. & Med.* 30: 221 (Nov.) 1932.

LONG CONTINUING CRAMPS OF LEGS

To the Editor:—A man, aged 60, a floriculturist, has had spasmodic cramps in the muscles of both legs since he was 10 years old, and now has them in the hamstring muscles. Nothing has ever given him any relief by way of treatment. I have never found anything on this subject in medical literature. Can you give me any information on this subject, including treatment? ALLEN HENRY WRIGHT, M.D., Northfield, Mass.

ANSWER.—It is difficult to determine what would cause cramps in the region described for a period of fifty years. It is scarcely likely that a patient could have tetany for this length of time without having cramps in the fingers. It might be worth while, however, to try calcium gluconate, 1.3 Gm. (20 grains) three times a day for a period of at least two weeks. If there is then relief, the trouble was probably due to low blood calcium.

BLOOD IN SCARLET FEVER

To the Editor:—What especial characteristics are there in the blood of a patient suffering from an attack of scarlet fever that enable one to make a differential diagnosis between this disease and any other acute septic condition of the throat; i. e., anything in the increase of white cell count or in the differential count? Please omit name.

M.D., South Dakota.

ANSWER.—In scarlet fever there is a leukocytosis, which begins before the appearance of the rash and usually results in a white cell count of 10,000 or over because of increase in the polymorphonuclear cells. The differential count characteristically shows a gradual increase in the number of eosinophils, which continues after the acute stage of the fever is passed and into convalescence. The eosinophils may compose 10 per cent or more of leukocytes.

PREPARATION OF POLLENS WITH COCA'S SOLUTION

To the Editor:—Please send me the formula for Coca's solution used in diluting hay fever pollens. D. P. JONES, M.D., Plainview, Texas.

ANSWER.—Coca in his book "Asthma and Hay Fever," published by C. C. Thomas in 1931, introduced several different formulas for extracting and diluting antigens. The following extracting fluid is satisfactory for pollens, as there is relatively slight deterioration of the excitant in this fluid. The fluid just referred to is called the "alkaline" extracting fluid. Its composition is as follows:

Sodium chloride	0.5	per cent
Sodium bicarbonate	0.275	per cent
Phenol	0.4	per cent

Coca stresses the importance of carbon dioxide being passed through this fluid until phenolphthalein added to a sample of it remains colorless. It is kept in tightly stoppered bottles. Some men dispense with the carbon dioxide.

In a liter volumetric flask, 5 Gm. of sodium chloride, 2.75 Gm. of sodium bicarbonate and 4 Gm. of phenol are placed and the flask is filled to the mark with distilled water. The mixture is sterilized by running through a Berkefeld or Seitz filter.

To test for sterility, three cultures are made, a dextrose agar stab, slant and broth, incubated for three days.

POISONING WITH IODINE

To the Editor:—A man, aged 21, in good health, took about 1½ ounces of an old concentrated tincture of iodine. He vomited shortly afterward and also following the administration of starch and soda solutions. Sodium thiosulphate was given intravenously. Twelve hours later there was a chill followed by persistent high fever (104 F.). There was an acute cardiac failure on the second day, with pulmonary edema. The patient died on the ninth day with cerebral poisoning. What is the usual course of iodine poisoning? Could any of the complications be attributed directly to systemic action of iodine or to the burns produced?

J. R. DIXON, M.D., Linneus, Mo.

ANSWER.—The patient's symptoms were not typical. Usually, in poisoning from ingestion of tincture of iodine, gastrointestinal symptoms predominate with vomiting, violent abdominal pains and diarrheic stools, which are sometimes bloody. Hemorrhagic nephritis may develop. Collapse, with feeble pulse, on the first day, sometimes postponed until the second day, as in this case, is a part of the usual picture. The chill and fever and the final "cerebral poisoning" were probably consecutive symptoms to the tissue changes; the latter was possibly uremic.

BOOKS ON TOXICOLOGY

To the Editor:—Will you please give me the name of the best brief yet comprehensive reference book on toxicology, including all the latest approved antidotes. I would not wish it too voluminous as I wish it for emergency requirements when needed.

FRANK E. JUDGE, R.Ph., Minneapolis.

ANSWER.—Murrell's "What to Do in Cases of Poisoning," edition 13, revised by Hamill, New York, Paul B. Hoeber, Inc., 1925, is a pocket size book. "A Manual of Toxicology" by Albert H. Brundage, published by D. Appleton & Co., 1929, is considerably larger. The most recent, and possibly best, but in German, is "Die wichtigsten Vergiftungen," by Erich Leschke, Munich, J. F. Lehmann, 1933.

INTRODUCTION OF MYDRIATICS IN OPHTHALMOLOGY

To the Editor:—Have you any information on how, why and where mydriatics came in use in eye work—a historical review of them—especially atropine and homatropine, with the others on the side as they came into use and all these by whom and when? I am interested in this as well as in the various technics and ideas used by the different men. Please omit name.

M.D., Massachusetts.

ANSWER.—The correspondent is recommended to consult the Graefe-Saemisch Handbuch der gesamten Augenheilkunde (ed. 11, vol. IV, second division, chapter III, p. 55, Mydriatica und Miotica, by Professor Snellen) or the Kurzes Handbuch der Ophthalmologie of Schieck and Brückner (vol. VII, p. 611, Die Pupillenerweiternden Mittel by Professor Frey). The effect of atropine on the pupil was first described by van Swieten in 1771 and its effect on accommodation by Wells in 1811. The other mydriatics (together with a brief history of their discovery) are described in the works mentioned. The method of employment is discussed at length in Ocular Therapeutics, by S. R. Gifford (1931) as well as in the various textbooks on refraction.

HEREDITY OF DIABETES AMONG INDIANS

To the Editor:—The medical men having to do with practice among the American Indians throughout this section (southern California) feel that there is an unusually high percentage of patients who have sugar in the urine. No comprehensive figures have been found concerning this. There has been surprisingly little coma or gangrene. I have it in mind to check by routine a large number of urines of patients appearing in the outclinic (or office) and checking these with sugar with a second urine and blood sugar. What other data should I ascertain in attempting to find out something conclusive about the incidence of diabetes mellitus among these people?

JAMES E. JONES, M.D., Pala, Calif.

ANSWER.—Data should be obtained that will allow classification according to sex, age, weight and height and also the previous maximum weight. Urines of patients should be examined and recorded in relation to meals. So far as possible the specimens should be secured one hour after eating, and tested at once, so that, if sugar shows in any specimen, the blood can be taken immediately for a blood sugar test. Information bearing on heredity would be valuable, but probably inadequate save as it relates to contemporaries. Dextrose tolerance tests would help to clarify doubtful cases.

DETERMINATION OF RACE OF FATHER BY BLOOD TEST

To the Editor:—In my practice last year I had a labor case in which the white girl was not married and had been in the state hospital for the insane at one time. She could not, or would not, give the name of the father. Her father and brother laid it to a young white man in the community. The baby is of dark complexion and the scrotum was very dark at the time of birth. The question arises: Is the father of the child white or black? There is to be a lawsuit. I have been unable to find anything definite in medicolegal books at my command. Can you give me anything that would be of aid in determining whether the child is of a white father or of a Negro father? That will be the main thing to determine in the trial. Anything you can give me from your library or knowledge will be appreciated. Any suggestion as to what is the best thing to do in the case will also be appreciated. Please omit name.

M.D., South Carolina.

ANSWER.—It is not possible to determine by any known blood test whether a parent of a given child is of a white or colored race. The physical characteristics of the child as mentioned in the question do not of necessity point to a colored father. Should the question narrow itself to whether a given man, white or colored, is the father, the determination of the blood groups of the child and the suspected man would show that the man might be the father or that he is not the father. Let it be noted well that there are no tests by means of which one can determine that a given man is the father of a given child. What is the best thing to do in cases like the one in question? Generally speaking, the best thing to do is to respect absolutely the limitations of our knowledge and to refrain from speculations.

MILK AND MOLASSES ENEMA

To the Editor:—Could you tell me who originated or popularized the well known "milk and molasses" enema? Please omit name.

M.D., Illinois.

ANSWER.—A somewhat limited search of the literature has failed to reveal data to answer this question. Hippocrates—though probably he did not originate them—recommended enemas of honey, sweet wine and olive oil with a little "nitron," possibly soda. As the olive oil was no doubt emulsified by means of the soda, this includes essentially the same ingredients as the "milk and molasses" enema: a concentrated sugar solution mixed with an emulsion, producing the same effect.

FACIAL SPASM

To the Editor:—An American woman, aged 62, came to see me last week with the following complaint: Three years ago, just after the shock of her husband's sudden death, she began to have visible twitchings in the outer corner of the left eye. It has gradually spread to the corner of her mouth and as far out as the outer angle of the left mandible. At times it draws up the corner of her mouth. It is not painful but is very uncomfortable and is present some time during every day and night. Physical examination shows everything normal. Will you kindly advise me as to treatment and diagnosis? Please omit name.

M.D., Michigan.

ANSWER.—This appears to be a case of so-called essential or true facial spasm, since the muscles involved apparently are those innervated by the facial nerve of one side. It must be differentiated from habit spasm or tic, which would involve muscles from different nerve supplies and not be likely to remain unilateral and circumscribed for three years. Drugs have little effect unless given in undesirably large doses. The spasm can be arrested by injection of not over 40 per cent alcohol in the facial nerve at the stylomastoid foramen. This

is not easy without practice and causes at first total or partial facial paralysis. After this has subsided in a few weeks or months, the spasm may not reappear for a long time. A surgical procedure was proposed last year by Sir Charles Ballance but would hardly be considered in a case as mild as the one here described.

ELECTRICAL SHOCK AND STERILITY

To the Editor:—A white man, now 27 years old, while working on an electric car in a sand and gravel pit three years ago, was rendered unconscious by an electrical shock. His clothes were sweaty; consequently, the short circuit from the electric car had good contact. He was knocked unconscious for eighteen hours. The question arises, Would such an individual be rendered sterile? The man has been married for three years without having produced any children. I should appreciate your opinion or any references. Please omit name.

M.D., Ohio.

ANSWER.—The first thing to be done is to examine a condom specimen for spermatozoa, and if live spermatozoa in sufficient numbers are found there is no question that the accident had no effect on his testicles. If, however, no spermatozoa are found and there is no obvious pathologic condition present to account for the azoospermia, the possibility of an injury to the pituitary lobe, especially the anterior portion of it, might be considered and the patient should be examined by an expert neurologist for other symptoms of pituitary dysfunction. Ordinarily, such an accident as the one mentioned has no effect in producing sterility.

ORAL ADMINISTRATION OF METHYLTHIONINE CHLORIDE (METHYLENE BLUE) NOT ADVISABLE FOR CYANIDE POISONING

To the Editor:—Geiger has shown quite definitely the value of the intravenous injection of methylene blue in the cases of cyanide or carbon monoxide poisoning. What effect may be expected of giving the methylene blue by mouth if intravenous medication is not at hand? Please omit name.

M.D., California.

ANSWER.—Oral administration of methylene blue as an emergency treatment of poisoning from cyanide or carbon monoxide would be too slow in action to do any good. Methylene blue when taken by mouth is absorbed probably too slowly to be effective. Presumably the effect, which must be immediate, demands that it be placed directly in the blood stream.

CROWE'S VACCINE FOR CHRONIC RHEUMATIC DISEASE

To the Editor:—Can you tell me whether the Crowe vaccine for chronic rheumatic diseases can be purchased in the United States? I have reference to the vaccine used by Dr. H. Warren Crowe of London, England. Please omit name.

M.D., Illinois.

ANSWER.—It is probably impossible to obtain Crowe's vaccine in America. Dr. H. Warren Crowe may be addressed at 15 Portland Place, W. I., London, England.

ISO-AGGLUTINATION

To the Editor:—Would you be kind enough to give me some help with blood typing and cross-agglutination. In several cases within the past year, blood belonging to the same group would not cross-agglutinate properly, agglutination occurring in the major side but never on the minor. I realize that there are several subgroups in group II but some of these have been in group IV (Moss). Most of the patients have been pregnant women, either before or after delivery, who have had a severe hemorrhage. One patient had pernicious anemia with a hemoglobin of 12 per cent (this patient had a transfusion with such blood with no untoward results). 1. Is there some change in the agglutinating properties of blood of pregnant women? 2. Has severe hemorrhage or anemia an effect on it? 3. Would it be safe to transfuse such blood? Please omit name.

M.D., Canada.

ANSWER.—1 and 2. So far as is known, there is no fundamental change in the iso-agglutinative properties of the blood in pregnancy, anemia or following severe hemorrhage.

3. Assuming that "such blood" means blood in pregnancy or other conditions of health, there would be no objection to its use for transfusion under proper circumstances.

PREPARATION FOR LOOSENING LINING MEMBRANE OF SINUSES

To the Editor:—Please furnish me the formula used to loosen the lining membrane of the frontal and maxillary sinuses in radical operations. I have seen this formula in one of the special journals but I am unable to find it. Please omit name.

M.D., Ohio.

ANSWER.—A solution that gives satisfactory results is made of trinitrophenol 5, acetone 35 and water 60 per cent.

Council on Medical Education
and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 5. Sec., Dr. Harry C. DeVigne, Juneau.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Boston, Chicago, Cleveland, New York, Philadelphia, St. Louis and San Francisco, Oct. 28. *Oral*. New York, Dec. 15-16. Application must be filed before Sept. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: The examinations will be held in various cities of the United States and Canada, Dec. 9. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Boston, Sept. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

COLORADO: Denver, Oct. 3. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

IDAHO: Boise, Oct. 3. Dir., Mr. F. L. Cruikshank, Boise.

IOWA: Des Moines, Sept. 12-14. Dir., Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: *Basic Science*. Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. The examinations will be held at centers where there are five or more candidates, Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science*. Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Dr. Charles Duncan, State House, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 12-13. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

PUERTO RICO: San Juan, Sept. 5. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

WISCONSIN: *Basic Science*. Madison, Sept. 23. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Kentucky June Report

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports the written examination held in Louisville, June 7-9, 1933. The examination covered 11 subjects and included 110 questions. An average of 70 per cent was required to pass. Sixty-five candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Louisville School of Medicine.....	(1932)	79	79
85, 87, (1933) 77, 79, 79, 80, 80, 80, 80, 80, 81, 81, 81, 81,			
81, 81, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83,			
83, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85,			
85, 85, 86, 86, 86, 86, 87, 89			
Harvard University Medical School.....	(1933)	85	85
University of Michigan Medical School.....	(1933)	83, 85	
University of Cincinnati College of Medicine.....	(1933)	84*	
University of Pennsylvania School of Medicine.....	(1933)	83	
Vanderbilt University School of Medicine.....	(1933)	83	

Twelve physicians were licensed by reciprocity with other states from June 19 to July 27. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1933)		Arkansas
Howard University College of Medicine.....	(1930)		Penna.
University of Georgia Medical Department.....	(1927)		Georgia
Rush Medical College.....	(1932)		Illinois
University of Michigan Medical School.....	(1929)		Michigan
University of Nebraska College of Medicine.....	(1919)		Oklahoma
Meharry Medical College.....	(1930)		Tennessee
University of Tennessee College of Medicine.....	(1916)		Mississippi,
(1930) Tennessee			
Vanderbilt University School of Medicine.....	(1931)		Tennessee
University of Texas School of Medicine.....	(1925)		Texas
Medical College of Virginia.....	(1930)		Virginia

*This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

Oklahoma June Report

Dr. J. M. Byrum, secretary, Oklahoma Board of Medical Examiners, reports the written examination held in Oklahoma City, June 7-8, 1933. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Fifty-nine candidates were examined, all of whom passed. Six physicians were licensed by reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Northwestern University Medical School.....	(1932)		1
Washington University School of Medicine.....	(1931)		1

University of Oklahoma School of Medicine.....	(1933, 55)*	55
Creighton University School of Medicine.....	(1933)*	1
University of Wisconsin.....	(1932)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California Medical School.....	(1928)		California
Rush Medical College.....	(1931)		Michigan
University of Minnesota Medical School.....	(1926)		Minnesota
Western Reserve University School of Medicine.....	(1925)		Ohio
University of Tennessee College of Medicine.....	(1932)		Tennessee
Baylor University College of Medicine.....	(1932)		Texas

*Licenses withheld pending completion of internship.

Book Notices

The Physiological Effects of Radiant Energy. By Henry Laurens, Ph.D., Professor of Physiology in the Tulane University School of Medicine, New Orleans, Louisiana. American Chemical Society Monograph Series. Cloth. Price, \$6. Pp. 610, with 104 illustrations. New York: Chemical Catalog Company, Inc., 1933.

This is a noteworthy addition to the excellent volumes known as the American Chemical Society Monograph Series. During the past quarter of a century a number of researches concerning the physical and biologic properties of radiant energy, as well as therapeutic applications of ultraviolet radiations (quartz mercury lamps and carbon arcs), in particular, have appeared in a variety of publications both in this country and abroad. Recent treatises on "light biology" or "photobiology" (such as those by Pincussen and Plotnikow) have appeared in German and have not been translated into English. Laurens has rendered a distinct service to that portion of the English-reading scientific world interested in the physical, physiologic and therapeutic properties of radiant energy, for he has covered this important field in encyclopedic fashion. The book will be welcomed by physiologists, biophysicists and biochemists, since it gives in outline, but with sufficient detail, the results of the trends of investigation that have to do with radiant energy, vitamin D, calcium and phosphorus assimilation, antirachitic activation and similar topics. The volume will be of value to the practicing physician, for the conclusions or suggestive leads that are derived from fundamental researches on the relationships between light and growth of animals and plants are carried over into clinical applications of radiant energy to diseases of the skin, blood, bone, parathyroid glands and lungs. Professor Laurens says: "The real triumphs of solar and artificial radiation, prophylactic and curative, are seen in rickets and extrapulmonary tuberculosis. . . . These results have been so clear cut in a large number of cases that there is no doubt about them. A knowledge of the biological effects of radiant energy and their clinical applications is now essential to the practitioner of medicine."

Clinique médicale des enfants: Maladies infectieuses. Deuxième série: Rougeole, scarlatine, coqueluche, pneumocoques, streptocoques, purpura infectieux, méningites à méningocoques, à bacilles de Pfeiffer, maladie de Heine-Médin, paludisme. Par P. Nobécourt, professeur de clinique médicale des enfants à la Faculté de médecine de Paris. Paper. Price, 60 francs. Pp. 430, with 139 illustrations. Paris: Masson & Cie, 1933.

This volume contains a second series of lectures on the infectious diseases. The lectures in the first series considered acute articular rheumatism, typhoid, paratyphoid and scarlet fever. The author starts with a discussion of measles. Two chapters are devoted to the statistical and clinical study of the disease in the first year of life. Following are chapters on the most important complications of measles. In young children the seriousness of measles is largely due to complicating respiratory conditions. The author lays particular stress on acute pulmonary edema and capillary bronchitis because of the rapidity of their onset and the intensity of the pathologic changes. Simple bronchopneumonia and tuberculous bronchopneumonia in the course of measles are also considered in detail, as are the difficulties in differential diagnosis. Besides standard diagnostic measures, the author advises the seroflocculation test of Vernes and the complement fixation of Besredka in attempting the differentiation. The complication of scarlet fever during the course of or following measles is next considered. The author stresses the fact that the majority of cases are seen in hospitalized children. Septicemia due to various organisms is discussed. The point is emphasized that in the presence of grave and moderately severe infection this diagnosis should be more frequently entertained.

Two lectures are devoted to pneumococcic infections and the varied clinical manifestations that may be seen in children. The discussion on erysipelas is almost limited to a consideration during the first three months of life. The point is made that erysipelas in infants up to the age of three months behaves in the same manner whatever its localization may be. The fact that the clinical manifestations of erysipelas vary before and after three months is cited as an example of the different paths which infectious diseases take in different periods of infancy. Agranulocytosis and infectious purpuras are discussed. The author believes that agranulocytosis is due to a latent medullary insufficiency brought to light by the occurrence of an infection. The various forms of meningitis and poliomyelitis are considered in detail. The lectures are concluded with a presentation of two children who contracted malaria from transfusion. The author points out the necessity of carefully examining and selecting donors for transfusion. The lectures are a valuable contribution to the comprehensive study of contagious diseases in children. The material presented presumes some clinical experience in infectious diseases, as the author does not attempt to give a complete discussion of each disease. He merely stresses such points as will clarify diagnosis and treatment. The data are largely the product of careful observation by a clinician who has a broad knowledge of medicine. This book is highly recommended to any one interested in acquiring a point of view which is not presented in the average textbook.

Handbook of Therapy. By Oliver T. Osborne, M.D., and Morris Fishbein, M.D., Editor, Journal American Medical Association, Ninth edition. Cloth. Price, \$2.50. Pp. 687. Chicago: American Medical Association, 1933.

Medical progress in all fields is such as to make the revising of books on therapy a necessity at fairly frequent intervals. The practitioner is especially interested in this field because a great deal of his success depends on the application of the newer methods. The usefulness of this book is enhanced on each revision by the inclusion of the latest reports in the treatment of disease and the elimination of methods that have been tried and found wanting. Thus, in the treatment of ulcer is found a discussion of the use of mucin. The latest reports concerning the use of serum in infantile paralysis, or poliomyelitis, are found in the chapter on this disease. Prescription writing, the treatment of poisoning, and the listing of useful drugs are presented in the early chapters. Then follow infectious diseases, disorders of the respiratory, gastro-intestinal and urinary tracts, diseases of metabolism, heart disorders, disturbances of the blood and blood-making organs, the thyroid, nervous system, skin disorders, diseases of the eyes and ears, and the treatment of acute intoxications. The modern methods of treatment are given in detail. The practitioner should find this book of inestimable value at all times. By referring to its pages, he will find outlined modern methods of treating disease in a form that is easily understood and easily applied.

Monographies oto-rhino-laryngologiques internationales. Publiées par M. Vernet, L. Ledoux, G. Portmann, H. Aloin et M. Sourdis. No. 24: Les hémorragies en oto-rhino-laryngologie. Par Henri Aloin et Robert Noël, professeur agrégé d'histologie à la Faculté de médecine de Lyon. (Analyses en Allemand, Anglais, Espagnol, Italien). Paper. Price, 35 francs. Pp. 227, with 9 illustrations. Paris: Les Presses Universitaires de France, 1932.

This brochure deals in a fairly concise manner with one of the dreaded phenomena that may occur in various forms of disease of the ear, nose and throat, and especially with or following operative procedures. Sebileau is quoted to the effect that "there is no operation, however slight, that even in the hands of the most cautious and skilful surgeon may not prove fatal." In this little monograph, the physiology and histology of the blood are discussed, as well as the theories regarding coagulation. The author mentions briefly the various conditions in which spontaneous hemorrhage may occur as well as those in which there is some delay in clotting time. The medical treatment of diseases such as hemophilia, with injection of serum, is discussed. Considerable detail is given to the treatment of operative or post-operative bleeding, the ligation of vessels, and the transfusion of blood. The latter is thoroughly discussed, and the study of the compatibility of donors is emphasized. The various methods described are well known, but this is a subject that is welcome

for all who do operative work in otolaryngology. An aid to the value of this little work is the summary given in German, English, Spanish and Italian. Not only does this widen its sphere from the reading standpoint but it really acts as an aid to those who have only a slight knowledge of the various languages, for by comparing the various texts one can easily learn the equivalents of many commonly used words. This work therefore fulfils several purposes.

The Science and Practice of Surgery. By W. H. C. Romanis, M.A., M.B., M.Ch., Surgeon and Lecturer on Surgery, St. Thomas's Hospital, and Philip H. Mitchiner, M.D., M.S., F.R.C.S., Hon. Surgeon to H. M. The King. Volume I: General Surgery. Volume II: Regional Surgery. Fourth edition. Cloth. Price, \$12 per set. Pp. 791; 911, with 752 illustrations. Philadelphia: Lea & Febiger, 1933.

This revision of Romanis and Mitchiner's valuable textbook of surgery attempts, as did the earlier editions, to present an integral and yet complete description of the field of surgery. The authors have accented the scientific background of each group of surgical entities, as is shown in the individual sections on surgical pathology and anatomy. The problems of differential diagnosis and treatment, which are of paramount importance to both the student and the general practitioner, are adequately dealt with. Because of the discreet mention of methods that are now obsolete, the new edition is hardly more than twenty-five pages longer than its predecessor. The chapters on diseases of the ear, nose and throat, and those on radiology, radium treatment, anesthesia and fractures and dislocations have been rewritten to conform with modern advances. Recent progress has been incorporated into the sections on blood transfusion, the sympathetic nervous system, cerebral surgery, bone diseases in relation to the parathyroid gland, carcinoma of the rectum and diseases of the spleen. The sections on peritonitis, varicose veins and burns and scalds also contain full and detailed accounts of modern treatment. The index has been amplified and carefully revised. The problem of postsurgical treatment, which has assumed considerable stature in this era of constant refinement, is properly considered. The book has the combined virtues of brevity and adequacy and is compact and well organized. The late developments in the fields of biologic chemistry and laboratory examination, which are now so frequently influencing modern medicine and surgery, are described when their importance warrants mention. The book consists of two volumes, one dealing with general surgery and the other with regional surgery. The volume on regional surgery contains sections on the specialties of medicine and surgical operative conditions. This work should be of value to both the student of medicine and to the man who practices general medicine.

Chirurgie de la main: Plaies, infections et chirurgie réparatrice. Par Marc Iselin. Préface du P^r Lenormant. Paper. Price, 55 francs. Pp. 339, with 111 illustrations. Paris: Masson & Cie, 1933.

This monograph is of especial interest to American readers both because it reflects the constantly increasing importance with which the conservative and reparative surgery of the hand is regarded in other countries as well as in our own and because of the author's grateful acknowledgment of his indebtedness to two prominent American surgeons, Kanavel of Chicago and Bunnell of San Francisco. The book is divided into three parts: the first, devoted to injuries; the second, to infection, and the third, to reconstructive surgery. The section on injuries is based on the author's experience with lacerated and crushing wounds, involving both the soft tissues and bones and joints, and covers the subject adequately. In the second section, on infections, the author takes issue with Kanavel on some points regarding the surgical anatomy of the hand and the method of choice of draining infections of the tendon sheaths. He states that the most important fascial spaces of the hand, from a surgical point of view, are the superficial and deep middle palmar spaces. By means of barium injections followed by radiographic examinations he has demonstrated these spaces to his satisfaction and believes that infections of the tendon sheaths of the index finger, as well as those of the middle and ring finger, rupture into the deep middle palmar space and not into the thenar space. It would perhaps have been wiser to state that in some cases pus rupturing from the tendon sheath of the index finger passes into the middle palmar space, for both Kanavel's careful experiments and an abundance of clinical cases are on record to show that

the common route of extension of pus rupturing from the tendon sheath of the index finger is into the thenar space.

Instead of draining an infected digital sheath widely by an incision at one side of the affected finger, he recommends a palmar incision at each side of the proximal end of the affected sheath and two corresponding incisions on the dorsum of the hand, with drains extending from each palmar incision through the palm to the corresponding incision on the dorsum. If this drainage of the "superior culdesac" does not suffice, he recommends subsequently an incision on one side of the finger, with division of the fibrous flexor sheath opposite the proximal phalanx. It is difficult for the reader who has followed Kanavel's teachings and observations to find a logical justification for a dorsal incision in cases of infection of the digital tendon sheaths, or for through and through drainage from the palm to the dorsum of the hand. It would seem wiser to hold to the author's second method, which in a more extended form has so long and so successfully been used by Kanavel and many others in the treatment of such infections.

The author's description of the superficial middle palmar space and other fascial spaces seems unduly confusing and complicated. If the surgeon keeps in mind the relatively simple facts concerning the position and attachments of the palmar aponeurosis he should not find it difficult to drain adequately infections of the fascial spaces of the palm.

Much of the section on reparative surgery is devoted to the subject of reconstruction of the flexor tendon, and this difficult procedure is well described. The illustrations of the author's method of introducing a tendon graft into a finger give the impression that this is a simple and easy thing to do. The surgeon who has transplanted flexor tendons into the fingers, whether to replace tendons destroyed as a result of infection or "frozen" in the sheaths as a result of an unsuccessful tendon suture, will find it difficult to believe that "catheterization" of the tendon sheath with a metal probe can actually be accomplished. What seems more probable is that an artificial subcutaneous tunnel is produced, in which under the most favorable conditions a tendon graft might move with a fair degree of freedom but in which more often the formation of fibrous tissue produces a serious obstacle to the gliding movement of the graft. In fairness it must be added that the author does not claim to have found a perfect method but states that he is attempting by his clinical experiments to find the most satisfactory method of introducing tendon grafts into the finger.

An interesting chapter on reconstruction of the thumb and an extensive bibliography form the concluding chapters.

The Duodenum: Its Structure and Function, Its Diseases and Their Medical and Surgical Treatment. By Edward L. Kellogg, M.D., F.A.C.S., Professor of Surgery, New York Polyclinic Medical School. With a foreword by George David Stewart, M.D., F.A.C.S. Chapter on Duodenal Parasites by Bailey K. Ashford, M.D., Sc.D., Professor of Tropical Medicine and Mycology, University of Porto Rico and Columbia University, N. Y. Section on X-Ray Diagnosis by A. Judson Quimby, M.D., Professor of Roentgenology, New York Polyclinic Medical School. Cloth. Price, \$10. Pp. 855, with 287 illustrations. New York: Paul B. Hoeber, Inc., 1933.

This is the first book written in English devoted to a discussion of the diseases of the duodenum. It is a large book, of which approximately three fourths is devoted to the consideration of the various aspects of the duodenum and the remainder to an extensive bibliography and index. The chapter on physiology was reviewed by Dr. A. C. Ivy, that on parasitology was contributed by Dr. Bailey K. Ashford, that on x-rays was contributed by Dr. A. Judson Quimby, and the text dealing with laboratory procedures was reviewed by Dr. F. M. Jeffries. The subject matter is for the greater part well presented with beautiful illustrations, original and borrowed, and the print is excellent and easy to read. There are numerous case reports appended to the discussions and a compilation of all or nearly all of the recorded cases of the rarer conditions described in the literature. There seems to be no valid reason for having a separate chapter on duodenal toxemia when the subject rightfully belongs to chapter XVII, which describes acute gastromesenteric ileus—a term evidently replacing acute dilatation of the stomach, so frequent after abdominal operations. The statement that urobilinogen is not normally present in the duodenal contents is not in accord with general knowledge, nor is it necessary to have an excess of urobilin to show urobilinogen in the duodenal contents. Also one must challenge the statement of the value

of the quantitative examination of the stool for urobilin as an index of hemolysis in the circulation. The chapter on lesions of the biliary tract in relation to diseases of the duodenum includes a discussion of the effects of pressure of the gallbladder on the duodenum, adhesions between these organs, pylorospasm and pyloric hypertrophy occurring and causing symptoms after removal of the gallbladder, periduodenitis, and the rôle of biliary calculi in the production of intestinal obstruction. The chapter on duodenal ulcer gives a good review of the etiology. The development of diverticula after healing of ulcers and the subsequent results are insufficiently emphasized. The author is evidently not in favor of subtotal resection as a form of surgical treatment of ulcer because he gives it scant consideration, does not describe the complete technic in the chapter on surgical treatment, and fails to mention subtotal resection or the name Polya in connection with this subject. A reference to resection is mentioned in the bibliography but not in the reading matter. The author further misstates the facts when he says that the good results of resection are due to the development of achlorhydria, whereas the real facts are that the acid-bearing cells of the stomach are in the fundus and are not removed by resection. The favorable results are due to the removal of the ulcer and ulcer-bearing area in the duodenum and stomach and the ensuing rapid emptying of the stomach. He also fails to emphasize the importance of hemorrhage or its symptoms in gastrojejunal ulcer. If one criticism was to be made of this work, it might be that there is a lack of balance in stressing the more from the less important subjects. One can almost expect this, however, in a large book devoted to one subject. It can be recommended as an excellent reference book to internists and surgeons.

Principles of Genetics: A Textbook, with Problems. By Edmund W. Sinnott, Professor of Botany, Barnard College, Columbia University, and L. C. Dunn, Professor of Zoology, Columbia University. Second edition. Cloth. Price, \$3.50. Pp. 441, with 168 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1932.

Medical science has made rapid progress in the last several decades. At the same time, during the past few years, genetics also made rapid strides. The busy physician, too, has but little opportunity for keeping up with the advancements made in this field. The second edition of this book has been prepared in order that recent investigations might be incorporated. Such topics as the induction of mutations by radiation, the discovery of segmental interchange between chromosomes and the extension of the balance theory of sex are discussed. In addition, new chapters have been added on the contributions of genetics to evolutionary theory and genetics and development. The facts of the principles of genetics are clearly presented in an easily comprehended style, with many highly illustrative diagrams and charts. This book should be found quite valuable for students, and interesting and profitable for the physician.

Kommunalärztliche Abhandlungen. Herausgegeben von Dr. B. Harms, Stadtarzt, Berlin, und Dr. Fr. Wendenburg, Beigeordneter, Gelenkirchen. [Nr. 7: Organisation und Arbeitsmethoden der kommunalen Schulzahn-pflege. Von Dr. med. dent. J. Kientopf, Direktor der städtischen Schulzahnklinik Berlin-Kreuzberg. Paper. Price, 14.80 marks. Pp. 128. Leipzig: Leopold Voss, 1933.]

In the preface, Dr. Kientopf states that the purpose of the book is to give an account of the development and methods of providing dental care for school children in Germany. He has been in the school dental service twenty-three of the thirty years of its existence. The first part deals with the history of the development. Starting as an outgrowth of general health examinations, two dental clinics were established in 1902 in Dresden and Darmstadt. By 1929, 822 cities and 118 towns had organized clinics or other means of giving dental care to school children. The second part describes in detail the methods of procedure in carrying out systematic school dental service. The equipment is either stationary, in larger cities, or portable by means of auto vans in less densely populated sections or is conducted in private offices. The personnel consists of graduate, licensed dentists and nurses who have definite duties to perform. They are carefully selected and must be in perfect health and have at least two years' experience in general dental practice. The organization requires that the dentists' health be safeguarded and provides for proper ventilation of operating room, protection against mercury vapors, an operating stool, a rubber inset in the floor around the chair and other conveniences. Orthodontic

treatment is not given unless it can be provided for through insurance or sickness funds. How the costs of the care are met by community, state, insurance and private contributions comprises a valuable and informative part of the book. About thirty pages is devoted to the various forms used for records, notifications and instructions to parents and children. These are interesting because of their unique wording. The book is instructive and interesting in that it gives a comprehensive study of the conditions under which the system developed. But it leaves one wondering what the future development will be, following the present economic crisis, because of the enormous growth of the movement and the layman's lack of interest and of means to support it properly.

History of Urology. Edited by Bransford Lewis, Chairman, Edgar G. Ballenger, William A. Frantz and Homer G. Hamer. Prepared under the auspices of the American Urological Association. In two volumes. Cloth. Price, \$8 per set. Pp. 385; 361, with illustrations. Baltimore: Williams & Wilkins Company, 1933.

The American Urological Association here attempts to record the history of the developments that have led to the rapid progress of urology as a specialty during the last thirty years. By urology is meant, broadly, the department of medicine that deals with the genito-urinary system, except the female reproductive organs. In these two volumes are assembled thirty contributions by American urologists on various aspects of the history of urology. A few chapters deal with the beginnings of urology in this country, but the greater part of the work is devoted to historical articles on the development of the knowledge of urologic diseases and abnormal conditions, together with their diagnosis and their treatment by surgical and other methods. An impressive amount of interesting historical material has been placed on record. At the ends of most of the chapters are more or less extensive lists of pertinent references. The publisher's part is well done. The work suffers from one serious shortcoming, which inevitably will tend to lessen its usefulness: the lack of author and subject indexes.

Der Wasserversuch als Nierenfunktionsprüfung: Eine Zusammenfassung für den Kliniker und praktischen Arzt. Von Dr. med. Ferdinand Lebermann, Facharzt für innere Krankheiten in Würzburg. Paper. Price, 9.50 marks. Pp. 145, with 20 illustrations. Dresden: Theodor Steinkopff, 1932.

The student who attempts to unravel the details of the various theories of renal function and then seeks to apply these theories in explaining the clinical observations in the various types of renal disease soon comes to feel that he is facing a problem compared to which the unraveling of the Gordian knot would be child's play. Furthermore, while the usefulness of functional tests in the recognition and in following the evolution of renal disease is generally recognized, there is no such agreement as to the choice of these tests. Each year sees the introduction of new methods for determining the functional capacity of the kidneys, and the proponents of each insist that their method is theoretically the most accurate and sensitive and, therefore, the method of choice. This is not the place to review the merits of these conflicting claims. Besides, lack of adequate laboratory facilities and questions of expense unfortunately preclude the use of many of these tests by the majority of physicians. Lebermann, therefore, does the general practitioner a service in calling attention anew to the simplicity of technic, the ease of performance, and the clinical usefulness of the combined water and concentration tests of Volhard and Strauss. In the present monograph he reviews the various theories of renal secretion, the maintenance of the water balance of the body, the pathogenesis of edema, the technic and normal response to the combined water and concentration tests, and the response to this test in various types of renal disease. There is an extensive bibliography and a satisfactory index. American readers will find the book disappointing in the absence of reference to the recent and fundamental work done in this country, particularly that of Richards, Marshall, Van Slyke and their co-workers. The failure to discuss the variation in the response to the water and concentration test by normal individuals seriously hampers the physician who seeks to apply it in his clinical practice. The goal of the author is worth while and, while it is not attained, the difference in the point of view from that common in this country makes this an interesting and, to the thoughtful physician, a stimulating presentation.

Medicolegal

Malpractice: Consent to Operation; Standard of Professional Skill.—One of the plaintiffs, a married woman, consented to the extraction of twenty-three of her teeth by the defendant, a licensed dentist, but she insisted that he should not extract all at the same time. Notwithstanding this, the dentist, after administering an anesthetic, extracted the twenty-three teeth at one sitting. The plaintiff was ill for some time after the operation and she attributed her illness to it. In a suit instituted by her and her husband, the court submitted to the jury two questions: first, the dentist's liability for the alleged unauthorized removal of the teeth; second, his liability for negligence. The jury returned verdicts aggregating \$2,300, and the defendant then appealed to the superior court of Pennsylvania.

"Where a patient is in possession of his faculties and in such physical health as to be able to consult about his condition, and where no emergency exists making it impracticable to confer with him, his consent is a prerequisite to a surgical operation by his physician," said the superior court, quoting 30 Cyc. 1576, 1577. An operation without the consent of the patient under such circumstances constitutes a technical assault. *Throne v. Wandell*, 176 Wis. 97, 101, 186 N. W. 146, 147. In such a case the defendant is liable for such damages as were occasioned by the assault, no matter how much care and skill he exercised. In the present case, however, the court was of the opinion that the evidence did not warrant verdicts aggregating \$2,300 and that the verdicts were therefore excessive.

The plaintiffs contended that the extraction of twenty-three teeth at one time constituted negligence. A physician, said the superior court, must employ such reasonable skill and diligence as are ordinarily employed in his profession in the same general neighborhood, having due regard to the advanced state of the profession at the time. If there is a dispute as to whether a physician has done so, a question of fact is presented which is for a jury to determine. If the symptoms of a disease or injury are such as may lead a skilful practitioner, using his best knowledge and judgment, to a mistake in diagnosis, the practitioner is not liable for that error of judgment; a jury will not be permitted to return a verdict against him because of it. Where competent medical authority is divided, a physician will not be held responsible if in the exercise of his judgment he follows the course of treatment advocated by a considerable number of his professional brethren in good standing in the community.

A careful examination of all the testimony, said the court, shows that the plaintiff failed to furnish sufficient evidence to submit to the jury to justify it in concluding that there existed a reasonably general agreement among dentists that it was not proper practice to remove twenty-three teeth at one time. The testimony showed that competent medical authority is divided and that the defendant followed a practice followed by a considerable number of his professional brethren in good standing in the community. A witness for the plaintiff testified that it was the general opinion of "the majority of dentists" that to extract that number of teeth at one time would be bad practice, but the liability of the defendant does not depend on "the general opinion of the majority of dentists." If a physician were limited to the performance of operations for the treatment of disease in ways recognized by a majority of the profession, all advance would be impeded, if not prevented. The great contributions that have been made to medical science have been made by those who have departed from the charted course and furnished new and useful methods.

The welfare of citizens and therefore of the state itself demands that persons practicing medicine shall be able and careful. For an injury to a physician's patient resulting from that physician's want of requisite knowledge, care and skill, or from his failure to use reasonable care and diligence, or from his failure to exercise his best judgment, the physician is answerable. Nevertheless, the same public interest requires that a physician shall not be held liable when he acts in accordance with the practice followed by a considerable number of his professional brethren in good standing in his community. The physician is required to have due regard to the advanced state

of the profession at the time, which implies that useful improvements in methods of treatment will be a departure from what the majority have theretofore held.

Because of technical errors in the submission of this case to the jury, with consequent confusion in their minds as to the standards to be applied, the judgment of the lower court was reversed and the case remanded.—*Moscicki v. Shor (Pa.)*, 163 A. 341.

Charitable Hospitals: Not Liable for Negligence of Nurses.—The plaintiff paid the defendant-hospital, a corporation not for profit, organized under the laws of Michigan, to care temporarily for his 2 weeks old baby, following the death of his wife. A baby of approximately the same age, the offspring of a father and his own daughter, was being cared for at the hospital at the same time. When the father of the baby of incestuous parentage called for it, one of the defendant's nurses, through negligence, gave him the plaintiff's baby. The mistake was discovered when the plaintiff called for his baby, but all effort to find his baby were fruitless. The father to whom the hospital had given the plaintiff's baby claimed that he had given it to strangers passing through the city in an automobile, but there was a strong intimation that the baby might be dead. The plaintiff sued the hospital.

Recognizing the rule prevailing in Michigan that a hospital formed for nonprofit purposes and supported by the benevolence of its contributors cannot be held liable for the torts of its agents or employees, the plaintiff based his suit on an implied contract to care for the baby at a stipulated fee per diem, the child to be returned when called for. But, said the Supreme Court, naming or labeling a count in a declaration a count in contract does not make it such when it is on its face a count in tort, nor is there any magic in the use of one term instead of the other, when the gravamen of the act complained of is the negligence or mistake of a servant of an eleemosynary institution exempted by law from liability. The plaintiff complained on appeal of the refusal of the trial court to grant a motion for a new trial, based in part on the claim that the defendant carried liability insurance. As far as that claim is concerned, said the Supreme Court, testimony would have been absolutely improper. *Sherwood v. Babcock*, 208 Mich. 536, 175 N. W. 470; *Williams' Adm'x v. Church Home*, 223 Ky. 355, 3 S. W. (2d) 753, 62 A. L. R. 721.

In directing a verdict in favor of the defendant-hospital, said the Supreme Court of Michigan, the trial judge correctly stated that there was no legal redress for the very great wrong done the plaintiff and that the great good generally accomplished by a hospital and the private contributions given for its support should not be impaired or even entirely wiped out by making it responsible for the occasional lapses of its employees.—*Greatrex v. Evangelical Deaconess Hospital (Mich.)*, 246 N. W. 137.

Insurance: Syphilis Innocently Acquired a "Venereal Disease."—The defendant insurance company issued to the plaintiff a policy of life and sick benefit insurance. The policy provided that the insurer should not be liable for benefits on account of "any venereal disease or disease of venereal origin." The plaintiff suffered from syphilis, syphilitic aortitis, and hypertension. He sought to obtain benefits under the policy, contending that the "venereal diseases" excluded from the coverage of the policy were only such as were contracted through sexual intercourse, and that he, being an old man, and long since impotent, had not contracted and could not have contracted his syphilitic infection in that way. The trial court dismissed his suit, and he appealed to the court of appeal of Louisiana, Orleans. It is quite likely, said the court of appeals, that originally the term "venereal," as applied to diseases, was intended to describe only such diseases as result from sexual intercourse, for until medical science recognized the bacterial origin of disease, the communication of venereal diseases by any other method must have been unknown. The germs, however, that cause the so-called venereal diseases do not depend on sexual intercourse for their spread; they may be disseminated by a handshake, a kiss, a common drinking vessel, and in other ways. Consequently, when we use the phrase "venereal disease" today, we do not necessarily mean—as was once the case—a love or sexual disease. The term means rather one of several diseases that are still so identified with sexual

intercourse as to be best described by the epithet venereal, although that epithet has now lost some of its appropriateness. The appellate court held that an insurance policy which excludes venereal diseases from its coverage imposes no liability on the insurer to compensate the beneficiary under the policy for the effects of syphilis, no matter how that disease may have been acquired. A venereal disease, whether it originates from sexual intercourse or from shaking the infected hand of a friend, is nevertheless a venereal disease.—*Coleman v. National Life & Accident Ins. Co. (La.)*, 145 So. 298.

Insurance: "Total Disability to Engage in Any Work" Construed.—A life and disability insurance policy provided certain benefits if the insured became totally and permanently disabled as the result of bodily injury or disease, so as to be prevented from engaging in any occupation and performing any work for compensation or profit. The policy provisions, said the Supreme Court of Minnesota, must be given a reasonable and practical construction, not inconsistent with the clear language therein used. So far as permitted by that rule, the policy provisions will be construed most favorably to the insured. A literal construction of all words used is not required. The policy will be considered as a whole. The court will take into consideration the situation existing when the policy was issued, the capabilities and occupation of the insured, and the risk intended to be covered. Total disability to engage in any occupational work for compensation or profit does not mean that the injured person must be wholly helpless. It means inability to perform any of the duties of any occupation which the insured might be ordinarily capable of performing. Although an injured person may be able to perform some parts of an occupation, he may be held to be totally disabled, unless he is able to perform the substantial and material parts of some gainful work or occupation with reasonable continuity.—*Wilson v. Metropolitan Life Ins. Co. (Minn.)*, 245 N. W. 826.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Boston, September 18-22. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Executive Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Lucerne-in-Quebec, Canada, September 11-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.
- American College of Surgeons, Chicago, October 9-13. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
- American Congress of Physical Therapy, Chicago, September 11-15. Dr. F. B. Balmer, 35 East Wacker Drive, Chicago, Secretary.
- American Public Health Association, Indianapolis, October 9-12. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.
- American Roentgen Ray Society, Chicago, September 25-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.
- Associated Anesthetists of the United States and Canada, Chicago, October 8-12. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
- Association of Military Surgeons of the United States, Chicago, September 25-27. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.
- Colorado State Medical Society, Colorado Springs, September 14-16. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.
- Delaware Medical Society of, Wilmington, September 26-27. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.
- Idaho State Medical Association, Twin Falls, September 18-19. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.
- Indiana State Medical Association, French Lick, September 25-27. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Murray, September 11-14. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, September 12-14. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.
- Nevada State Medical Association, Las Vegas, September 29-30. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.
- New England Surgical Society, Boston, September 29-30. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.
- Ohio State Medical Association, Akron, September 7-8. Mr. Don K. Martin, 131 East State Street, Columbus, Executive Secretary.
- Pennsylvania, Medical Society of the State of, Philadelphia, October 2-5. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.
- Southern Minnesota Medical Association, New Ulm, September 25. Dr. M. C. Piper, Mayo Clinic, Rochester, Secretary.
- Utah State Medical Association, Salt Lake City, September 14-16. Dr. L. R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.
- Vermont State Medical Society, Barre, October 5-6. Dr. W. G. Ricker, 31 Main Street, St. Johnsbury, Secretary.
- Washington State Medical Association, Seattle, August 28-30. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

S: 441-584 (April) 1933

Gallop Rhythm and Physiologic Third Heart Sound: I. Characteristics of Sounds, Classification, Comparative Incidence of Various Types and Differential Diagnosis. C. C. Wolferth and A. Margolies, Philadelphia.—p. 441.

*P Wave Changes in Acute Coronary Artery Occlusion. A. M. Master, New York.—p. 462.

Clinical Observations on Dynamics of Ventricular Systole: IV. Mitral Insufficiency and Mitral Stenosis. H. Feil and D. D. Forward, Cleveland.—p. 471.

Heart Disease in General Medical Practice: Preliminary Report of Morbidity Survey Conducted by the New York State Department of Health. J. V. DePorte, Albany, N. Y.—p. 476.

Reversal in Direction of QRS Complex of Experimental Right Bundle-Branch Block with Change in Heart's Position. W. Ackerman and L. N. Katz, Chicago.—p. 490.

Study of Viscerocardiac Reflexes: I. Experimental Production of Cardiac Irregularities by Visceral Stimulation. S. E. Owen, Chicago.—p. 496.

Id.: II. Experimental Production of Cardiac Irregularities in Icteric Dogs with Analysis of Role Played by Nausea and Vomiting. P. J. Crittenden and A. C. Ivy, Chicago.—p. 507.

*Significance of Large Q in Lead III of Electrocardiogram During Pregnancy. F. B. Carr, Worcester, Mass.; B. E. Hamilton and R. S. Palmer, Boston.—p. 519.

Electrocardiographic and Blood Pressure Changes in Experimental Pericardial Effusion and Occlusion of the Venae Cavae. E. B. Bay, W. Gordon and W. Adams, Chicago.—p. 525.

Simple Method for Graphic Description of Cardiac Auscultatory Signs. H. N. Segall, Montreal, Canada.—p. 533.

Aortic Aneurysm with Huge Secondary Aneurysm of Chest Wall: Report of Case. L. E. Hines and J. R. Miller, Chicago.—p. 537.

P Wave Changes in Coronary Occlusion.—Master demonstrates that definite changes in the P waves occurred in thirty-two (80 per cent) of forty cases of acute occlusion of the coronary artery. These changes consisted for the most part in an increase in the amplitude of the P wave of at least 0.5 mm. and occasionally in notching or widening of the auricular complex. In sixteen patients (40 per cent) the P waves measured 2 mm. or more in height in some lead. The change occurred more frequently in leads I and II than in leads II and III, but always in lead II. The author suggests that P wave changes in leads I and II are associated with left auricular dilatation. The P waves were larger in the first few days of acute illness when cyanosis, congestion of the lungs, enlarged liver, severe dyspnea or orthopnea were present and became smaller when there was recovery from circulatory failure. The P waves were larger when RST changes were present and returned to normal when T wave inversions appeared. There is evidence that the larger P wave early in acute disease of the coronary artery is indicative of a dilated auricle, and it is suggested that this chamber takes over a portion of the work of the injured ventricle. The increase in size or the change in the shape of the P wave is one of the electrocardiographic signs of acute occlusion of the coronary artery.

Large Q in Lead III of Electrocardiogram During Pregnancy.—Carr and his associates found a large Q₃, as defined by Pardee, in 17 of the 342 pregnant women referred to their hospital for an estimation of their cardiovascular status. This is slightly less than 5 per cent. Ninety-eight of these women had organic heart disease or signs that justified a diagnosis of possible organic heart disease. Only three of these patients, slightly more than 3 per cent, had a large Q₃. Of the 342 women, 244 had no organic heart disease. Fourteen of these, 5.7 per cent, had a large Q₃. The anginal syndrome was not present in any of this series, nor have the authors ever found it in a pregnant woman. A large Q₃ may occur transiently, apparently modified by phases of respiration. They

found nine such cases in this series. A large Q₃ is frequently associated in this series with an inverted T₃ and a low or inverted P₃. These observations are characteristic of a transverse position of the heart, according to evidence from the literature. The comparatively frequent occurrence of a large Q₃ during pregnancy in patients with normal hearts, as contrasted with its reported rare occurrence in a series of patients with normal hearts in which pregnancy was not mentioned and probably was rarely present, suggests that a large Q₃ may be related to a transverse position of the heart such as occurs during pregnancy. In the authors' opinion, therefore, a large Q₃ is not reliable as a sign of heart disease.

American Review of Tuberculosis, New York

27: 315-410 (April) 1933

Role of Emotion in Tuberculosis. Mary B. Eyre, Claremont, Calif.—p. 315.

*Gastric Function in Pulmonary Tuberculosis. S. J. Cohen, Chicago.—p. 330.

Blood Pressure in Tuberculosis: Study of Two Hundred and Thirty Consecutive Tuberculosis Patients. A. R. Masten, Wheat Ridge, Colo.—p. 342.

Generalized Tuberculosis Complicated by Presence of Yeastlike Organisms: Report of Clinical History and Necropsy. H. W. Ferris, New York.—p. 348.

Closure of Adherent Tuberculous Cavities by Combined Artificial Pneumothorax and Phrenicectomy. P. Slavín, Glen Gardner, N. J.—p. 355.

*Effects of Cod Liver Oil Concentrate Injections: Preliminary Report, with Especial Reference to Pulmonary Disease. B. Gordon and R. J. Titherington, Philadelphia.—p. 368.

Appliance for Immobilization in Pulmonary Tuberculosis. S. C. Davis, Tucson, Ariz.—p. 375.

*Tuberculin and Schilling Blood Differential Count in Diagnosis and Classification of Tuberculosis. J. F. Bredeck, St. Louis.—p. 377.

Effect of Tuberculin on Spermatozoa from Normal and Tuberculous Guinea-Pigs. Lillian C. Donaldson and A. J. Vorwald, Chicago.—p. 401.

Gastric Function in Pulmonary Tuberculosis.—Cohen concludes from the results of 1,000 Ewald meals, of which 134 were in minimal cases of tuberculosis, 530 in moderately advanced cases and 336 in far advanced cases, that, as the tuberculous process increases in the lungs, there is a corresponding diminution of free acid in the gastric juice. The percentage of achlorhydria in the various stages of the disease is practically the same, averaging about 7 per cent. This percentage is practically the same as in any nontuberculous group of patients. There is an increase in the latent period for the onset of the secretion of free acid in tuberculous patients. The motor activity of the stomach is within normal range. The pepsin concentration varies in direct proportion with the percentage of free acidity. The percentage of achlorhydria in patients with fever is about three and a half times as high as in those without fever. About 20.8 per cent of the patients complain of gastro-intestinal symptoms on entering the sanatorium. However, only 6 per cent of the patients develop these symptoms at the same time as they develop tuberculosis. The gastro-intestinal complaints of tuberculous patients represent complications of the disease rather than symptoms, and consequently one may not speak of a "pretuberculous dyspepsia."

Effects of Cod Liver Oil Injections.—Gordon and Titherington gave injections of cod liver oil concentrate to animals with vitamin A deficiency and to sixty-four (twelve suffering from active pulmonary tuberculosis) tuberculous and nontuberculous patients with a possible reduction in the storage of the vitamin A fraction. In the animals there was a decrease in the signs of vitamin A deficiency following the injection of concentrate. In the patients a decrease in certain manifestations occurred following a series of concentrate administrations. So far as determined, there was no evidence of a specific effect on the tuberculous lesions. The possible value of parenteral administrations of cod liver oil concentrate was considered in patients with low resistance to the existing infection who are unable to tolerate foods rich in vitamin A values. In the present stage of the clinical study the influence on tuberculosis cannot be evaluated because the patients have not been followed for a sufficient period of time. An increase in strength and appetite, and a sensation of well being and decreased pain in the chest were not uncommon in the ambulatory patients. The influence on weight was variable, nine showing a gain in weight of from 1.5 to 3.2 Kg.

Schilling Blood Count in Tuberculosis.—Bredeck presents the results of the Schilling differential count as observed

in 305 cases in which the subcutaneous tuberculin test was used. He made an analysis of the various types of cases, all of which were under observation for two years or longer following subcutaneous tuberculin tests. He concludes that the interpretation of the clinical importance of the subcutaneous tuberculin test can best be judged by the Schilling blood differential count. The Schilling count is a more accurate measure of induced focal reactions than are fever, general tuberculin reactions, physical signs, or x-rays. A classification of the various stages of activity as well as those of healing can best be made by the Schilling count together with the subcutaneous tuberculin test. The subcutaneous tuberculin test together with the Schilling count is the most delicate and accurate method in the diagnosis of early manifest and induced focal activity.

Annals of Internal Medicine, Ann Arbor, Mich.

G: 1251-1370 (April) 1933

The Heart in Myxedema: Electrocardiograms and Roentgen-Ray Measurements Before and After Therapy. J. Lerman, R. J. Clark and J. H. Means, Boston.—p. 1251.

Heredity in Diabetes. W. Allan, Charlotte, N. C.—p. 1272.

Undulant Fever: Fatal Case. R. C. Rothenberg, Cincinnati.—p. 1275.

Subacute Yellow Atrophy of Liver Following Ingestion of Cinchophen and Allied Compounds. W. K. Grigg and V. C. Jacobsen, Albany, N. Y.—p. 1280.

*Migrating Pneumonia: Certain Mechanical Factors in Its Production, Prevention and Treatment. W. B. Faulkner, Jr., A. N. Fregeau and E. C. Faulkner, San Francisco.—p. 1289.

Maintenance Dosage of Liver Extract in Treatment of Pernicious Anemia. P. J. Fouts and L. G. Zerfas, Indianapolis.—p. 1298.

*Cardiospasm with Associated Arthritis. J. H. Fitzgibbon, Portland, Ore.—p. 1305.

*Study of Eight Hundred Abnormal Electrocardiograms and Associated Clinical Conditions. M. A. Mortensen, Battle Creek, Mich.—p. 1308. Value of Posterior-Anterior Chest Lead in Cardiac Diagnosis. A. Lieberman and F. Lieberman, New York.—p. 1315.

Localized Atrophy of Subcutaneous Fat Following Repeated Injections of Insulin: Report of Case. F. Engelbach, Ann Arbor, Mich.—p. 1322. Primary Spondylitis. W. P. Holbrook, R. M. Stecher and E. M. Hayden, Tucson, Ariz.—p. 1327.

Teaching of Inheritance of Disease to Medical Students: Proposed Course in Medical Genetics. Madge Thurlow Macklin, London, Ont., Canada.—p. 1335.

Migrating Pneumonia.—The Faulkners and Fregeau state that postoperative massive collapse of the lung has many characteristics in common with bronchopneumonia and lobar pneumonia. Both show strong tendencies to migrate to identical areas following similar changes in the posture of the patient. They present evidence which shows that the migrations in pneumonia are on a mechanical basis. They are dependent on the original site of the pneumonia, the posture of the patient, the intrabronchial anatomy, and the amount and viscosity of the intrabronchial pus. This whole problem is intimately connected with the mechanism of "internal drainage," i. e., the spilling of secretion from place to place within the same or the opposite lung. Thin secretion spills deeply into the lung, plugs small scattered bronchi and produces a migratory bronchopneumonia. More viscid material gravitates less readily. It leads to obstruction and infection of the major bronchi, resulting in a migratory lobar pneumonia. The administration of expectorants, the use of saturated solution of potassium iodide to lessen the viscosity of the secretions, and the adoption of proper postures offer a means of evacuating the bronchi and preventing internal drainage, which is responsible for the production of migrating pneumonia. The bronchoscopic removal of the intrabronchial exudate is to be recommended whenever the patient fails to respond promptly to other therapeutic measures.

Cardiospasm with Associated Arthritis.—Fitzgibbon has treated a patient for five years in whom cardiospasm and arthritis are associated. Symptoms of arthritis have at times accompanied the appearance of difficulty in swallowing but have improved after dilation of the stenosis. From the course of the patient's arthritis, the author assumes that improvement was the result of relieving the stricture of the esophagus. Previous to dilation, the patient regurgitated large amounts of mucopurulent, blood streaked material from the esophagus and showed signs of having rather marked esophagitis due to retention above the stricture. The author concludes that the inflammatory lesions in the esophagus acted as foci of infection, which activated the arthritis, and that drainage resulting from the relief of the stenosis permitted healing of these lesions with improvement in the arthritic symptoms.

Abnormal Electrocardiograms and Associated Clinical Conditions.—In his study of 800 abnormal cardiograms, Mortensen found all groups of cardiac diseases represented. He classifies them into three main groups: those that are supposedly due to irritation of the myocardium, those due to infections, and those due to degenerative processes. He states that, in the management of the various types of cases, the best program in his experience is to eliminate anxiety or fear and consider focal infections and toxins, such as coffee, tea and tobacco, as possible causes. It is also important to eliminate reflex disturbances of gastro-intestinal origin. In addition, one should consider the use of quinidine sulphate and sometimes a mild sedative for relief. Auricular fibrillation deserves a good prognosis under proper management. Careful judgment must be used in the exhibition of quinidine sulphate, as permanent relief of arrhythmia takes place in only a small percentage of cases. It should be avoided in severe cases of mitral stenosis. When there is a suggestion of decompensation, digitalis is the remedy of choice. When one is developing a program of exercise, each patient must be considered individually. A vigorous program of weight reduction by diet and physical therapy may be ventured in the more robust patient who is closely observed, if definite evidence of myocardial inefficiency is lacking. Little food is necessary to maintain the desired weight when it is once established. In patients presenting marked hypertension, particularly those with high diastolic pressure and marked renal inefficiency, the protein intake can be safely reduced to 50 or 60 Gm. daily. The use of fruits and fruit juices should always be encouraged and should furnish a considerable portion of the carbohydrate. Experience convinces the author that the greatest reduction in blood pressure and improvement in cardiac efficiency is obtained by reduction in weight, exercise, and a careful regulation of the patient's daily program with reference to work and recreation.

Archives of Neurology and Psychiatry, Chicago

29: 683-934 (April) 1933

Development of Meninges: Further Experiments. S. C. Harvey, H. S. Burr and E. VanCampenhout, New Haven, Conn.—p. 683. Subdural Space and Its Linings. T. Leary and E. A. Edwards, Boston.—p. 691.

*Myelitic and Myelopathic Lesions: III. Arteriosclerotic and Arteritic Myelopathy. M. Keschner and C. Davison, New York.—p. 702. Rhythmic Myoclonus of Muscles of Palate, Pharynx, Larynx and Other Regions: Clinical Report of Three Cases. H. A. Riley and S. Brock, New York.—p. 726.

*Palatal Myoclonus: Report of Two Cases with Necropsy. W. Freeman, Washington, D. C.—p. 742.

Cerebral Circulation: XXI. Action of Hydrogen Sulphide. H. S. Forbes and Catherine C. Krumhaar, Boston.—p. 756.

Id.: XXII. Venous Pressure: Effect of Caliber of Pial Arteries. K. H. Finley and H. S. Forbes, Boston.—p. 765.

Pain and Touch Fibers in Peripheral Nerves. P. Heinbecker, G. H. Bishop and J. O'Leary, St. Louis.—p. 771.

Effects of Alcohol on Chronaxia of Motor System. W. Malamud, E. Lindemann and H. H. Jasper, Iowa City.—p. 790.

*Ten Years' Experience in Treatment of Epilepsy with Ketogenic Diet. H. F. Helmholz and H. M. Keith, Rochester, Minn.—p. 808.

*Etiology of Polyneuritis. I. S. Wechsler, New York.—p. 813.

Measurement of Electrical Skin Resistance. M. Levine, Cincinnati.—p. 828.

Syndrome of Fibrillary Astrocytomas of Temporal Lobe. B. Schlesinger, Vienna, Austria.—p. 843.

Arteriosclerotic and Arteritic Myelopathy.—Keschner and Davison believe that myelopathic lesions secondary to circulatory interference within the cord from partial or complete occlusion of the spinal or meningeal vessels, or of both, may be due to arteritis or to arteriosclerosis. Of these, the latter, in contrast to the frequency of cerebral lesions due to atherosclerosis, is unusually rare, arteritis being much more common. In their eight cases of myelopathy due to vascular disease, there were two of atherosclerosis and six of arteritis. In the latter, syphilis was a factor in five cases, and tuberculosis in one. Except for the changes in the vessels, the histopathologic picture of the arteritic group does not differ essentially from that of toxic myelopathy. Clinically, cases of myelopathy due to arteritis present unusual difficulties in diagnosis. They may begin suddenly or gradually; they may begin with signs and symptoms of a level lesion of the cord; some of them may show evidences of diffuse involvement of the neuraxis at the onset; others may present a clinical picture of infectious myelitis, posterolateral sclerosis or multiple sclerosis, and still others may present a picture of an intramedullary or an extramedullary

neoplasm. The fact that soon after the onset there appear symptoms indicative of involvement of other components of the neuraxis, resembling in this respect the cases of toxic myelopathy, may be of diagnostic aid. Another diagnostic aid is the clinical, serologic or cytologic evidence of syphilis. Histopathologically, the atherosclerotic group showed marked destruction of the nerve cells, myelin sheaths and axis cylinders, accompanied by dense gliosis. In the arteritic group the changes were similar, except that the glial response was poor.

Palatal Myoclonus.—Freeman reports two cases in which myoclonic movements of the palate and pharynx were observed during life, associated with infarction of the central tegmental fasciculus and hypertrophic degeneration of the olivary body. Both cases were complicated by the occurrence of numerous lacunae in the brain stem and elsewhere. The author believes that the central tegmental fasciculus constitutes a part of the automatic faciorespiratory synkinetic system. It would appear to arise in the substantia innominata of Reichert, mostly contralateral but with some homolateral fibers decussating through the posterior commissure, and to fuse with the ventral ground bundle of the spinal cord. Its relationship to the inferior olive is evidently close, because of the degeneration of the latter structure after damage of the tract. The myoclonic movements of the palate and pharynx are part of a more complex movement, which in its full development comprises synchronous rhythmic movements of all the faucial musculature and of the larynx, face and diaphragm, and sometimes the intercostal muscles and fingers.

Ketogenic Diet in Treatment of Epilepsy.—Helmholz and Keith present the results of the treatment of 369 epileptic patients by means of the ketogenic diet. Fifty-one of these patients had symptomatic epilepsy, 42 were treated for one year or less, and 89 did not cooperate sufficiently for the authors to judge the effect of the diet. Twenty-seven patients could not be included in the group in which treatment was satisfactory because no information could be obtained from 14, 4 were not classified, and in 9 the diet was probably not responsible for the improvement. Of the remaining 160 in whom results can be judged, 36 per cent are well, 21 per cent are improved and 43 per cent were not benefited. These figures are similar to the authors' previous reports (1927 and 1930). They discuss the reason for the therapeutic anticonvulsive action of the ketogenic diet and point out that aceto-acetic acid and its sodium salt are able to prevent experimentally produced convulsions in rabbits, that their action is not quite so pronounced as the action of phenobarbital but is greater than that of the other acetone bodies tested and is more marked than even that of extreme dehydration.

Etiology of Polyneuritis.—After a study of nine cases of polyneuritis, Wechsler believes that the following conclusions are warranted: 1. Many cases of polyneuritis of obscure origin are probably neither toxic nor infectious in nature but more likely are deficiency syndromes. Even if, from their clinical appearances, they cannot be regarded as cases of beriberi or pellagra, they might still be grouped with the avitaminoses. This view is fortified if one can elicit a history of prolonged loss of appetite, diarrhea or vomiting, absence of free hydrochloric acid or other evidence of gastric, intestinal or hepatic disease. Sometimes the giving of foodstuffs rich in all vitamins or the administering of special vitamins will serve to prove the point. Polyneuritis of pregnancy, which is almost invariably preceded by severe vomiting and hence starvation, certainly belongs in this group. 2. In many cases of polyneuritis which have heretofore been regarded as due solely to a specific cause, such as alcohol, lead, arsenic or phosphorus, one finds an additional, possibly determining, factor in avitaminosis. This may be due to involvement of the gastro-intestinal tract or the liver, of which there is not infrequently clinical evidence. Such a view may explain why polyneuritis develops only in certain patients, although all are exposed to the same poison. 3. The fact that the general pathologic changes are degenerative rather than inflammatory and that in lead and diabetic neuritis the central nervous system degeneration is as important as peripheral degeneration furnishes pathologic evidence of some value. 4. While in beriberi and pellagra the antineuritic vitamins B₁ and B₂, or G, are involved, in some obscure cases and in some

others in which the avitaminosis seems to play the decisive part it may be that other or additional vitamins are concerned. There is some experimental evidence which proves that absence of vitamin A and possibly also of C and D can lead to degenerative changes in the spinal cord, the roots and the nerves and that their presence will prevent degeneration by poisons which sometimes affect the nervous system.

Archives of Otolaryngology, Chicago

17: 457-624 (April) 1933

- *Carcinoma of Lung and Bronchus: Treatment with Radon Implantations and Diathermy. J. D. Kernan, New York.—p. 457.
- Bilateral Atresia of External Auditory Canal Without Malformation of Concha: Report of Case with Surgical Relief. B. N. Colver, Glendale, Calif.—p. 476.
- Rôle Which the Epidermis Plays in Suppurations of Middle Ear. J. G. Druss, New York.—p. 484.
- Genetic Factor in Otosclerosis. C. B. Davenport, Bess Lloyd Milles and Lillian B. Frink, Cold Spring Harbor, N. Y.—p. 503.
- *So-Called Thymic Death: V. Respiratory Sensitization to General and Local Anesthetics. G. L. Waldbott, Detroit.—p. 549.
- Disease of Sinuses: Diagnosis and Treatment by Displacement. J. R. Frazee, Boston.—p. 554.

Carcinoma of the Lung and Bronchus.—Of the sixty cases in which Kernan performed bronchoscopies, the tumors in only five were diagnosed early enough to offer any chance of cure. He reports ten cases, most of which were of fairly long duration. All the tumors sprang from the mucous membrane of the large bronchi. In spite of the fact that the five successful cases were graded malignant on Broders' scale, none had metastasized. It was possible to destroy the tumors with diathermy and radon implantations, and there have been no local recurrences as yet, although one case has been followed for five years. All the successful cases were in women. All the patients had suppuration in the lung beyond the site of the tumor. The symptoms varied. In some of the early tumors, pulmonary signs are due to blocking of the bronchus, and roentgen examination suggests a much more extensive pulmonary disease than is really the case. One patient, a girl, who is still well after eight years, in spite of a tumor graded 4, was only 17 at the time her case was diagnosed. Two others who are still well after five and two and a half years, respectively, were under 35 years of age, while the remaining two, who have lived two and three years after the tumors were treated, are both under 50.

So-Called Thymic Death.—Waldbott studied the pathologic changes in twelve cases of what has been termed "thymic death," four of which occurred during ether anesthesia. He observed features that indicate a marked resemblance to anaphylactic death as it is observed following injections of pollen and serum. He has collected a series of cases of human anaphylactic shock following the administration of substances other than protein and demonstrated that any substance which produces allergic symptoms, whether it contains protein or not, may also produce human anaphylactic shock, provided three conditions are fulfilled: an extreme degree of sensitivity, a dose above the patient's tolerance, and a rapid absorption of the antigen. The clinical manifestations are the same, no matter what the material that causes the shock. He believes that the best known evidences of sensitization to cocaine, procaine and similar chemicals are cutaneous manifestations, particularly in the form of contact dermatitis and urticaria. The author concludes that all allergic patients to be operated on should be tested for the anesthetic which is to be administered, and that a clinical test consisting of the inhalation of the general anesthetic or a previous administration of the local anesthetic, well diluted, should be made. A conjunctival test consisting of the application of a diluted solution of the local anesthetic into the conjunctival sac may aid in the discovery of sensitization. With a local anesthetic, special caution should be exercised to prevent an accidental intravenous injection. With the exception, perhaps, of the synthetic ephedrine, there is no drug known at present that prevents anaphylactic shock other than epinephrine. Such drugs should be given with every application of a local anesthetic. The retardation of the absorption of the anesthetic through its vasoconstrictive action, as well as the ability of epinephrine to counteract the basic lesion of anaphylaxis, namely, capillary dilatation, accounts for the beneficial effect of this drug in anaphylaxis.

Archives of Pathology, Chicago

15: 465-610 (April) 1933

Experimental Chronic Nephritis Produced by Radium. L. J. Adams, Montreal, Canada; W. C. Egloff and J. P. O'Hare, Boston.—p. 465.
Effect of Cinchophen on Albino Rat. L. S. Radwin and M. Lederer, Brooklyn.—p. 490.
Reticulum in Tumors. L. L. Tureen and M. G. Seelig, St. Louis.—p. 498.

*Shock Syndrome in Mercuric Chloride Poisoning. V. H. Moon and B. L. Crawford, Philadelphia.—p. 509.
Coccidiosis of Liver in Rabbits: III. Experimental Study of Histogenesis of Coccidiosis of Liver. H. Smetana, New York.—p. 516.

Mercuric Chloride Poisoning.—Moon and Crawford report the case of a man who died of circulatory failure within thirty-seven hours after the ingestion of 175 grains (11.3 Gm.) of mercuric chloride. There was no clinical evidence of disturbance of the cardiac contraction impulse. There was no cardiac lesion which would indicate defective cardiac function as a cause of the circulatory failure. The shock syndrome was the most prominent clinical manifestation. Postmortem examination showed both gross and microscopic changes characteristic of shock: widespread dilatation of capillaries and venules, with edema and capillary hemorrhages. These were most marked in the organs of respiration. The evidence indicates that mercuric chloride may act as a capillary poison and that as such it produces the same circulatory phenomena and the same gross and microscopic changes as are found in shock.

Georgia Medical Association Journal, Atlanta

22: 123-162 (April) 1933

Tonsillectomy in Childhood Tuberculosis. E. Callaway, La Grange.—p. 123.
Endometrial Hyperplasia: Report of Cases. P. L. Holliday, Athens.—p. 125.
Study of Chronic Hepatic Entities, Except Tumors. J. J. Pilcher, Wrens.—p. 127.
The Country Doctor. H. K. Phillips, Cleveland.—p. 129.

Indiana State Medical Assn. Journal, Indianapolis

26: 147-208 (April 1) 1933

*Diagnosis and Treatment of Allergic Conditions and Chronic Infections of Respiratory Tract in Children. H. B. Mettel, Indianapolis.—p. 147.
Associated Psychoneurosis. P. S. Johnson, Richmond.—p. 154.
Diarrheas of Early Life: Simple Classification and Outline of Treatment. H. D. Lynch, Evansville.—p. 155.
Malignant Neutropenia: Case Report. Jane Ketcham, Indianapolis.—p. 159.
Public Opinion. F. T. Romberger, Lafayette.—p. 161.
Medical Relief in Kokomo. P. W. Ferry and R. P. Schuler, Kokomo.—p. 163.
Maternal Mortality and Common Sense. A. Hall, Springfield, Ill.—p. 165.
The Chiropactic Situation. F. Jett and A. W. Cavins, Terre Haute.—p. 169.

Diagnosis and Treatment of Allergic Conditions.—Mettel believes that any results obtained in the treatment of chronic sinus disease or allergic conditions of the nose and throat depend on the etiologic factor involved. Satisfactory results are entirely dependent on its treatment and control. It is certain that, if allergy can be controlled or possibly cured in early cases, advanced pathologic changes may be prevented, and the possibility of secondary infection consequently should surely be less probable. If all sinus cases would be considered as being either allergic with or without secondary infection, or as primarily infected or suppurative, benefit would be gained by the distinction. By following the principles of treatment adaptable to each group, one should be able to obtain far more satisfactory results than those prevailing in the past. This again can be accomplished only by the painstaking study of the pediatrician and the most competent cooperation of the rhinologist.

Johns Hopkins Hospital Bulletin, Baltimore

52: 255-324 (April) 1933

Description of the Osler Clinic: Its Organization. W. T. Longcope, Baltimore.—p. 255.
Description of the Halsted Surgical Clinic. D. Lewis, Baltimore.—p. 262.
The Henry M. Hurd Memorial Hall. W. H. Smith, Baltimore.—p. 267.
Presentation of the Portrait of Dr. John Whitridge Williams. H. J. Stander, Baltimore.—p. 271.
The Mental and Social Status of Fifteen Hundred Patients in the Obstetrical Clinic of the Johns Hopkins Hospital: How This Relates to Problems of Eugenics. Grace Baker, Baltimore.—p. 275.
Pigment in the Nails During Hyperthyroidism. H. M. Thomas, Jr., Baltimore.—p. 315.

Journal of Lab. and Clinical Medicine, St. Louis

18: 657-764 (April) 1933

Hemorrhagic Tendency in Jaundice: Study of Blood Fibrin, Sedimentation Rate, Coagulation Time and Other Blood Factors. C. F. Burke, Madison, Wis., and J. F. Weir, Rochester, Minn.—p. 657.
Studies of Calcium and Phosphorus Metabolism: XIX. Effect of Diet on Urinary Acid and Ammonia Excretion in Man. W. T. Salter, R. F. Farquharson and Dorothy M. Tibbetts, Boston.—p. 669.
*Variations in Certain Constituents of Blood of Relatively Normal Individuals. Esther M. Greisheimer and F. P. Army, Minneapolis.—p. 680.
*Studies in Serology of Syphilis: XI. Clinical and Statistical Evaluation of New Flocculation Test for Syphilis: Based on 26,611 Tests in Comparison with Wassermann Reaction, and 2,473 in Comparison with the Kahn. H. Eagle, Baltimore.—p. 684.
Some Properties of Pneumocholin, Biochemical Antigen. E. E. Ziegler, Boise, Idaho.—p. 695.
Therapeutic Use of Iodized Oil in Pulmonary Disease. D. B. Cole and E. C. Harper, Richmond, Va.—p. 704.
*Corrected Erythrocyte Sedimentation Test. A. C. R. Walton, Baltimore.—p. 711.
Clinical Method for Serum Protein. M. J. Breuer, Lincoln, Neb.—p. 723.
Studies in Serology of Syphilis: X. Precipitation Tests for Syphilis with Spinal Fluids. H. Eagle, Baltimore.—p. 725.
New Details of Technic in Air Analysis. R. W. Swift, State College, Pa.—p. 731.
Automatic Method of Recording Blood Flow. A. L. Bennett and E. U. Still, Chicago.—p. 739.
Study of Vitali's Test for Atropine. C. F. Poe and R. Clemens, Boulder, Colo.—p. 743.
Modified Witt Filtration Apparatus Suitable for Multiple Potassium Determinations. A. R. McIntyre, Ann Arbor, Mich.—p. 750.
Concerning Stability of Glycerinated Hemolysin. R. A. Kilduffe, Atlantic City, N. J.—p. 751.
Giemsa Stain for Tissue: Rapid Method. W. L. McNamara, Hines, Ill.—p. 752.

Variations in Relatively Normal Blood.—Greisheimer and Army studied seven constituents of the blood in 214 relatively normal persons (105 men and 109 women) in a fasting condition. The age range was from 18 to 77 years, with an average of 27.49 years. The mean for true dextrose was 84.01 ± 0.33 ; this agrees well with previous work by this method (Holt and Greisheimer, 1931, and Glassberg, 1931). The difference between the sexes is not significant. The true dextrose level bears no relation to the level of either calcium or inorganic phosphate; this was shown by the low correlation coefficients. The mean serum calcium is 10.591 ± 0.016 . The present values are slightly lower than those found earlier (Greisheimer, 1929), but the difference between the two series is of doubtful significance. The mean inorganic phosphate is 3.419 ± 0.02 . The inorganic phosphate level bears no relation to the serum calcium level, as was shown by the absence of correlation. The mean serum sodium chloride is 577.06 ± 0.72 . The mean urea nitrogen is 13.53 ± 0.13 ; it formed 39.9 per cent of the total nonprotein nitrogen; it bears a definite relation to the total, as is shown by the high degree of correlation. The total nonprotein nitrogen is 33.91 ± 0.18 ; the mean for the men is significantly higher than that for the women. The mean uric acid is 3.24 ± 0.024 ; the mean for the men is significantly higher than that for the women.

New Flocculation Test for Syphilis.—Eagle devised a precipitation test, embodying (1) an optimal adjustment of the variables which control the aggregation, (2) the use of the centrifuge to facilitate aggregation and (3) the use of a new sensitizing substance, corn germ sterol, as an adjunct to cholesterol. He believes the advantages of the test to be (1) greater sensitivity, (2) simplicity of technic, (3) increased reliability, (4) convenience and (5) inexpensiveness. The author's material consists of 10,383 tests on approximately 1,500 known syphilitic patients under active treatment or observation and 16,228 tests on approximately 14,000 dispensary and hospital patients. This flocculation test has proved to be more sensitive than either the Wassermann or the Kahn reaction, detecting 75 per cent of 10,383 known syphilitic serums, as compared with 58.7 and 60.2 per cent for the Wassermann and Kahn reaction. It is comparatively free from doubtful results, only one in 137 tests (0.7 per cent) being dubious, as compared with 1.4 per cent for the Wassermann and Kahn reactions. In at least forty-six untreated cases of clinically active syphilis the precipitation test was positive, and with the Wassermann test negative or doubtful. To obtain the antigen, 50 Gm. of dried powdered beef heart is extracted at 37 C. for fifteen minutes with 200 cc. of ether with intermittent shaking. The process is repeated three times and the ether filtrates are discarded. The powder is dried and extracted with 250 cc. of 95 per cent ethyl alcohol

for from three to five days at 37 C. with repeated shaking. The extract is filtered and the moist powder washed with from 3 to 50 cc. portions of 95 per cent alcohol. The combined filtrate and washings are evaporated down to 250 cc. One and five-tenths grams of cholesterol and 1.5 Gm. of corn germ sterol are added and dissolved by boiling, a final concentration of 0.6 per cent for each. To perform the test, the antigen is heated at from 55 to 75 C. for a few minutes to dissolve all the sensitizer. One and three-tenths volumes of a 4 per cent solution of sodium chloride are blown into one volume of antigen, and the milky suspension allowed to "ripen" for at least thirty minutes at room temperature. Kept in the icebox, this suspension is good for from forty-eight to seventy-two hours, gradually increasing in sensitivity. The serums to be tested are inactivated at 56 C. for twenty minutes. To 0.4 cc. is added 0.04 cc. of the antigen dilution; the tubes are shaken for two minutes and placed at 37 C. for four hours. The tube is then centrifugated for fifteen minutes at 1,500 revolutions per minute, and 1.2 cc. of a 0.85 per cent solution of sodium chloride added. In a strongly positive serum there is seen a coarse aggregation of the antigen with a perfectly surrounding clear fluid. In a less strongly positive serum there are definite aggregates. A negative serum remains opalescent, with a homogeneous cloud of refractile particles. Any intermediate result, in which the contents of the tube seem finely granular, lacking the watered silk appearance of the negative reaction, or in which there are a few nondescript particles, is read as doubtful. All such doubtful results are recentrifugated at higher speed after shaking; if the test is really positive, the antigen forms a coherent white flake at the bottom of the tube. The recentrifugation of any doubtful result is essential for the best results.

Standardization of Sedimentation Test.—Walton describes a procedure which endeavors to standardize the erythrocyte sedimentation test. The method is as follows: By the usual method, 4.5 cc. of blood is withdrawn from an antecubital vein, taking great care not to produce an unnecessary degree of venous stasis; otherwise in a rapidly sedimenting blood some erythrocyte fall in vivo will occur. This specimen is rapidly introduced into a tube and intimately mixed with 0.5 cc. of sodium citrate solution already contained therein. A red cell count is made of this sample, so that it will be known how to divide approximately the 5 cc. specimen for dilution or concentration. It is usually expedient to place 2 cc. of blood in a small tube and to centrifugate the other 3 cc. in order to obtain plasma with which to dilute the specimen to be tested. The object is to have at least 2 cc. of blood the red cell content of which after appropriate addition of plasma will register an even million figure; i. e., 6,000,000, 5,000,000, 4,000,000 and so on. From this suspension one can readily abstract a sample of blood for a sedimentation test, so that the sedimentation tube will contain 1 cc. the content of which is 5,000,000 red cells per cubic millimeter. The sedimentation tube is now corked and an even suspension of blood obtained by inverting and rotating the tube about its long axis. If any air bubbles remain on the surface, they must be broken by the application of a heated glass rod before sedimentation is allowed to proceed. The sedimentation height or height of clear plasma lying above the column of red cells is measured at the end of one hour. The author also presents a modification of this method which requires 1 cc. of citrated blood to be used in those cases in which it is desirable to take only a small amount of blood.

Kansas Medical Society Journal, Topeka

34: 123-162 (April 1) 1933

Insects and Poisonous Snakes. W. A. Hayward, Coffeyville.—p. 125.
Diaphragmatic Hernia: Three Case Reports. K. A. Fischer, Arkansas City.—p. 127.

*Human Sarcosporidiosis: Case Report. R. M. Price, Wellington.—p. 132.

Oral Sepsis and Tooth Infection. L. C. Eberhart, LaCrosse.—p. 136.
Supraclavicular Proprius Muscle. H. B. Latimer, Lawrence.—p. 138.

Sarcosporidiosis.—Price reports a case of sarcosporidial infection in a man, aged 55, in whom the parasite seems to have been the cause of a definite symptom complex, no other cause having been discovered for the patient's illness. Sarcosporidia are possibly more pathogenic for man than was formerly believed. Cattle, sheep and hogs should be more closely

investigated for evidence of this infection. It seems that the disease may be acquired by eating infected meat, which was probably the mode of entrance in the author's patient.

Laryngoscope, St. Louis

43: 233-350 (April) 1933

Experimental and Clinical Study of Histocytes in Acute and Chronic Inflammation of Accessory Sinuses. R. A. Fenton and O. Larsell, Portland, Ore.—p. 233.

Infection and Resistance in Upper Respiratory Mucosa. C. S. Linton, St. Louis.—p. 242.

*Otitic Infection with Gastro-Enteritis in Infants. M. Rabbiner, Brooklyn.—p. 274.

Correction of Postauricular Defect by Implantation of Fascia Lata. C. M. Griffith and A. Schaffner, New York.—p. 280.

Rhinophyma: Case. H. L. Hunt, New York.—p. 282.

Nasopharyngeal Malignancy: Case Report. E. H. Moyle, New York.—p. 283.

Radium in Malignant Tumors of Nasal Sinuses. G. A. Robinson, New York.—p. 285.

Stylohyoid Ossification, Bilateral, and Injury of Ninth Nerve After Tonsillectomy. R. H. Fowler, New York.—p. 287.

Tonsillectomy in Presence of Thyroid Disease. H. G. Bullwinkel, New York.—p. 291.

Extrinsic Lipoma of Larynx. J. A. Flynn, Washington, D. C.—p. 294.

Laryngectomy, Fourteen Years Ago: Case. J. McCoy, New York.—p. 298.

Otitic Infection in Infants.—Rabbiner presents a study of nine cases of mastoiditis in infants associated with gastro-intestinal disturbances. Of the nine infants, eight were operated on, resulting in four recoveries and four deaths. The other infant, who finally died, was not operated on, as he was considered a poor surgical risk. The author concludes that mastoid surgery should be resorted to in those infants having otitic infection with parenteral diarrhea which cannot be checked by the pediatrician. The operation in all cases should be bilateral despite the fact that only one ear may show a definite otoscopic picture, while in the other the observations may be indefinite, as the infection may be confined to the antrum and is probably due to a localized pocketing of embryonal tissue around the aditus, the drum membrane not showing its true condition. The author believes that many of these infants have mild attacks of otitis media without symptoms which may or may not undergo complete resolution and act as a focus of infection. Although the intestinal history in each of his patients antedated the ear condition, the latter probably is a definite etiologic factor in this syndrome. He emphasizes the often stressed point that cooperation between the pediatrician and the otologist is most essential for the proper care of infants who suffer from this disturbance.

Medical Annals of District of Columbia, Washington

2: 71-98 (April) 1933

Life and Death Instincts. W. A. White, Washington.—p. 71.

Hour Glass Stomach: Review. W. W. Sager, Washington.—p. 76.

The Bonus Army: Health and Sanitary Problems. J. G. Cumming, Washington.—p. 82.

*Full Term Abdominal Pregnancy: Report of Case. J. J. Mundell, Washington.—p. 86.

Perforated Duodenal Ulcer: Summary of Fifteen Cases. J. G. Lewis, Washington.—p. 91.

Full Term Abdominal Pregnancy.—Mundell reports a case of full term abdominal pregnancy in which a practically normal live baby was obtained and in which the mother recovered, the placenta having been left in situ and the abdomen closed without drainage. Since the statement that at least 50 per cent of all mature babies in abdominal pregnancies are grossly malformed is incorrect, operation should be deferred until near term if the condition of the mother warrants it, in the best interest of both the mother and the baby. If the attachment of the placenta is widespread, it should be left in situ and the abdomen closed without drainage.

Medical Journal and Record, New York

137: 265-308 (April 5) 1933

Intestinal Toxemia. A. Bassler, New York.—p. 265.

Indications for Operation in Diseases of Gallbladder. M. Einhorn, New York.—p. 269.

Anesthesia in Gynecologic Surgery. M. C. C. Lilienfeld, New York.—p. 270.

How Yeasts are Related to Tumor Growths. J. A. Buchanan, Brooklyn.—p. 272.

Primary Acute Cholelithiasis and Appendicitis Occurring During the Puerperium. G. I. Miller, Brooklyn.—p. 275.

Head Injuries. R. O. Pfaff, Des Moines, Iowa.—p. 276.

Nebraska State Medical Journal, Lincoln

18: 121-160 (April) 1933

- Acute Intussusception. C. W. Mayo, Rochester, Minn.—p. 121.
 Consideration of Occipitoposterior Presentation, with Especial Attention to Diagnosis, and Delivery by the Scanzoni Maneuver. C. W. Dorsey, Denver.—p. 125.
 Exfoliative Dermatitis: Approach to Its Pathogenesis. C. C. Tomlinson and O. J. Cameron, Omaha.—p. 128.
 Differential White Blood Cell Count. E. B. Reed, Lincoln.—p. 133.
 Prevention of Cancer of Cervix. P. Findley, Omaha.—p. 136.
 First Annual Report of Use of X-Rays and Radium by the Tumor Clinic of the Creighton Memorial St. Joseph's Hospital. J. F. Kelly, Omaha.—p. 138.
 Surgical Indications in Goiter. R. H. Whittham, Lincoln.—p. 143.
 Torsion of Hydrosalpinx: Report of Two Cases. R. A. Moser and A. Brown, Omaha.—p. 144.
 Subdiaphragmatic Abscess. M. Emmert, Omaha.—p. 147.
 Chronic Inversion of Uterus: Report of Case. M. E. Grier, Omaha.—p. 148.

New England Journal of Medicine, Boston

208: 721-770 (April 6) 1933

- Fractures of Femur: Study of End-Results in Sixty-Nine Cases. F. M. Findlay, Boston.—p. 721.
 Postoperative Thrombosis and Embolism. E. L. Hunt, Worcester, Mass.—p. 730.
 Carcinoma of Rectum. R. B. Cattell, Boston.—p. 740.
 Progress in the Study of Cardiovascular Disease in 1931. S. McGinn and H. B. Sprague, Boston.—p. 747.

208: 771-818 (April 13) 1933

- Brief Review of Essential Pathology of Pericarditis. C. F. Branch, Boston.—p. 771.
 *Carcinoma of Buccal Mucosa: End-Results 1918-1926. C. C. Lund, Boston, and Hilda M. Holton, West Medford, Mass.—p. 775.
 Diphtheria Immunization and the Private Practitioner. G. W. Anderson and G. H. Bigelow, Boston.—p. 781.
 Cancer Mortality of Massachusetts, 1860-1929. F. L. Hoffman, Wellesley Hills, Mass.—p. 782.
 Present Development of Psychiatric Technic in Criminal Process. Frances L. Roth, New Haven, Conn.—p. 785.
 Progress in Study of Cardiovascular Disease in 1931. S. McGinn and H. B. Sprague, Boston.—p. 789.

Carcinoma of Buccal Mucosa.—Lund and Holton present the five-year end-results in 1,126 carcinomas of the mouth seen from 1918 to 1926, inclusive. The cases have been analyzed and presented according to a classification that is slightly modified from that of the American College of Surgeons. It is shown that small cancers of the mouth are curable in a much higher percentage of cases than has been realized. The authors present and discuss data on the problem of the best form of treatment, but they have drawn no final conclusions. This discussion includes surgical methods, radium treatment, combined surgery and irradiation, radical versus incomplete surgery, and surgery versus irradiation.

New Jersey Medical Society Journal, Orange

30: 299-370 (April) 1933

- *Management of Running Ear. G. W. Mackenzie, Philadelphia.—p. 299.
 Chronic Suppurative Otitis Media: Conservative Management and Treatment. E. A. Atwood, Paterson.—p. 304.
 Problems in Modified and Radical Mastoid Operations. C. W. Buvinger, East Orange.—p. 310.
 The Child Who Will Not Eat. S. A. Levinsohn, Paterson.—p. 314.
 Carcinoma of Thyroid, with Skeletal Metastases. W. W. Maver, Jersey City.—p. 318.
 *Acute Silicosis. R. Pomeranz, Newark.—p. 320.
 Myocardium Following Acute Infections. C. L. Andrews, Atlantic City.—p. 326.
 National Health Insurance of England Applied to These United States. A. Sinson, Brooklyn.—p. 332.

The Running Ear.—Mackenzie points out that, when an otologist makes the diagnosis of "otitis media suppurativa chronica," he does no better than the patient who states that he has had a "running ear for a long time." A diagnosis worthy of the name must be comprehensive. It should include an exact knowledge of the following facts: 1. Every possible etiologic factor. 2. Whether the particular etiologic factor still exists. 3. Have secondary changes arisen locally which can hinder recovery notwithstanding the removal of the etiologic factor? 4. Does any dyscrasia exist which lowers the resistance of the patient? 5. Is the diet of the kind that will facilitate the resistance of suppurative processes? 6. Is the patient getting a sufficient amount of sunlight for calcium fixation, the generation of the maximum number of leukocytes and other resistant factors? The author's treatment of a running ear consists of: (1) local light therapy; (2) cleansing the ear after the most thorough manner and according to particular

indications, until he can discern all the details it is possible to discern with the otoscope; (3) shrinking the parts with cocaine; (4) the use of that particular therapeutic agent directly to the middle ear cavity which seems to be indicated; most often it happens to be silver nitrate or some form of iodine; (5) alcohol to dry the parts and aid in sterilization; (6) introduction of dry gauze wicks to favor drainage and act as a telltale, and (7) home treatment, consisting of cleansing with hydrogen dioxide and alcohol, three times a day.

Acute Silicosis.—Pomeranz presents roentgen and microscopic observations in five cases from a large series presenting acutely developed silicosis. The dust silica particles below 1 micron in size were found in the interstitial lung tissue and in the glands. The experiments show the extent of the toxic action of silica, especially on lung tissue, and the progressiveness of the fibrosis. That the fibrosis is progressive and irreparable can be seen from the serial roentgenograms of the living men after they gave up their occupation. The fibrosis is due to the deposit of minute particles of free silica in the interstitial tissue of the lungs. It could be considered a defense reaction of the organ to the toxic (chemical and colloidal) effect on the cells. The author observed a case of tuberculosis acutely reactivated after exposure to silica dust. It is evident that the problem is to prevent the fine particles (1 micron and less) from entering the lungs of employees. This can be achieved by: (1) mechanical improvements, such as masks and ventilation; (2) shortening the hours of exposure; (3) thorough examination of applicants, refusing an applicant who shows signs of latent or active tuberculosis; (4) periodic health examination of every employee; (5) compensation by law of every case of established silicosis; (6) discharge of any man who shows signs of even a beginning silicosis, and, (7) if all the mechanical and medical improvements do not succeed in diminishing the dangers of the exposure, discontinuance of the manufacture of this fine dust.

New Orleans Medical and Surgical Journal

85: 723-792 (April) 1933

- *Treatment of Cardiac and Renal Edema. J. G. Carr, Chicago.—p. 723.
 Tabulation of Cases of Rat-Bite Fever in the United States and Canada: Report of Case. C. J. Bloom, New Orleans.—p. 731.
 Undulant Fever. R. H. Clark, Hattiesburg, Miss.—p. 737.
 *Artificial Pneumothorax. S. F. Strain, Sanatorium, Miss.—p. 742.
 Modern Concept of Diagnosis of Oral Pathology. S. L. Tibbler, New Orleans.—p. 749.
 Some Etiologic Factors in Periodontoclasia: Its Prognosis and Treatment. L. J. Schoeny, New Orleans.—p. 753.

Treatment of Edema.—Carr states that, in beginning the treatment of a case of cardiac edema, it is customary to restrict the fluid intake to 1,000 cc. daily. This may be increased to a daily allowance of 1,500 cc. as the edema disappears. The fluid intake must be moderate if practiced at all, after the dropsy has disappeared, in those patients with cardiac failure in the course of malignant hypertension or nephrosclerosis in whom the specific gravity of the urine is fixed at a low level. Rest is important. The use of digitalis in cardiac failure implies simultaneous rest, rest in bed and sleep. A notable remission of symptoms and subsidence of edema may occur with rest alone, independently of any medication. The total daily intake of salt should be limited to approximately 3 Gm. It is the author's custom not to continue a course of the Karell diet for more than five days, during which the patient should be confined to bed. After the first forty-eight hours it may be supplemented by small quantities of dry food; i. e., two graham crackers with each glass of milk. The author states that there is no treatment of nephritic edema that may be recommended as a routine procedure. The types of renal edema may be considered under four heads: (1) acute nephritis (glomerular or glomerulotubular), (2) chronic glomerulotubular nephritis with edema; (3) lipid nephrosis, and (4) the various forms of contracted kidney in which edema occurs only as a result of an acute exacerbation of nephritis or of cardiac failure. The treatment of edema in the types of renal disease may be summarized as follows: Rest in bed, fluid restriction and salt restriction is indicated in all; the inflammatory process characteristic of nephritis affords a contraindication to the use of diuretics, absolute in the acute form, relative in the chronic; and protein restriction is indicated in nephritis because of the danger of retention of the end products, while in lipid nephro-

sis protein is indicated. In lipid nephrosis, fats are restricted and thyroid in large doses is occasionally of value. Protein should be given freely. The xanthin diuretics are of doubtful efficacy. The mercurials are dangerous in the cases in which there are actual renal pathologic changes. In lipid nephrosis, prior to the end stage with signs of nephritis and beginning renal insufficiency, the acid producing diuretics are of especial value, and other diuretics, including the mercurials, may be used with due regard to the conditions of the particular case. In true nephrosis, a high protein diet to balance the constant loss of large quantities of albumin, and low fat to lessen the blood cholesterol, which may be the offending substance rather than simply the result of the general condition, is indicated. Sodium chloride and fluids should be restricted. Mercurials may be used in the stage of nephrosis alone.

Artificial Pneumothorax.—Strain points out that most cases of tuberculosis diagnosed in the early stage respond satisfactorily to rest treatment; a limited number of the more advanced cases can be benefited by artificial pneumothorax. Pneumothorax immobilizes the lung, collapses cavities and prevents absorption of tuberculotoxins, relieving symptoms and permitting healing. It is indicated (1) in cases in which the disease is largely limited to one lung which does not respond to rest treatment, (2) in cavities which show no tendency to heal, (3) in hemoptysis and occasionally (4) in lung abscess and (5) bronchiectasis. It is rarely, if ever, indicated in pleurisy with effusion. It is contraindicated (1) in cases in which there is extensive disease in the better lung, (2) in advanced enteritis, (3) in extensive laryngitis, (4) in the presence of heart and kidney disease, (5) in elderly patients, (6) in asthma, emphysema and cyanosis, and (7) in neurasthenia. The technic of administering pneumothorax is not difficult but must be thoroughly understood before it is attempted. Pneumothorax must be kept up at least a year and, in most cases, from two to five years or longer. Factors interfering with successful collapse are pleural adhesions, thick walled cavities and extension of the disease in the contralateral lung. Complications incident to pneumothorax are pleural effusion, empyema, pleural shock, air embolism, and pleural effusion or spontaneous pneumothorax on the opposite side. Artificial pneumothorax has its dangers, limitations and disadvantages, but it is a procedure of great value in selected cases of pulmonary tuberculosis.

Northwest Medicine, Seattle

32: 129-172 (April) 1933

***Cirrhosis of Liver:** Its Character and Incidence in Six Thousand Five Hundred Autopsies. F. R. Menne and T. W. Johnston, Portland, Ore.—p. 129.

Intersigmoid Hernia: Report of Case with Study of Anatomy of Fossa. W. C. Hunter, Portland, Ore.—p. 138.

Thickening of Terminal Ileum with Mesenteric Adenitis in Children. E. W. Rocky, Portland, Ore.—p. 145.

Prophylaxis of Peritonitis. J. F. Scott, Yakima, Wash.—p. 147.

Abdominal Pain as Diagnostic Aid. J. M. Bowers, Seattle.—p. 149.

Union of Nerve Tissue with Novocain in Spinal Anesthesia: Clinical Significance of Such Union. G. C. Vehrs, Salem, Ore.—p. 153.

Osteomyelitis. J. C. O'Day, Honolulu, Hawaii.—p. 158.

Cirrhosis of Liver.—Menne and Johnston made a study of the livers from 6,500 necropsies which, according to the partially modified classification of cirrhosis as submitted by the International Association for the study of Geographic Pathology, revealed the presence of 89 (1.36 per cent) instances subdivided as follows: (1) alcoholic atrophic cirrhosis, 28 (31.4 per cent); (2) syphilitic cirrhosis, 20 (22.4 per cent); (3) children's cirrhosis, 5 (5.6 per cent), (4) and 2 instances (2.2 per cent) of acute yellow atrophy cirrhosis. The remainder of the cases were those occurring in chronic passive congestion, fatty livers and parasitic disease. While the authors include the latter in the total number, they question their consideration as types of cirrhosis. Alcohol and other by-products of distillation (copper) act only indirectly through their effect on the gastro-intestinal tract. There is definite evidence that streptococci of intestinal tract origin produce cirrhosis. The gross clinical and pathologic manifestations of cirrhosis vary with the individual and the causative agents. The observation of such end stages has led to faulty classifications. The pathogenesis involves a disposition of deleterious substances through the portal vein, the bile ducts, the hepatic artery and the lymph nodes. Factors of augmenting obstruction are probably secondary. All the histologic changes are the result of toxicity.

Therefore the terms "obstructive" and "toxic" cirrhosis cannot be applied as indicating distinctive types. The authors' studies of cirrhosis support the indirect rôle of alcohol and the greater factor of infection and metabolic products in the etiology of cirrhosis, the pathogenesis as determined experimentally and the classification as proposed by Mayo (portal and biliary), which classification they modify by the inclusion of all avenues of the diffusion of toxic substances that may excite cirrhosis of the liver.

Public Health Reports, Washington, D. C.

48: 375-410 (April 14) 1933

Experimental Studies of Water Purification: VI. General Summary and Conclusions. H. W. Streeter.—p. 377.

Surgery, Gynecology and Obstetrics, Chicago

56: 719-846 (April) 1933

Roentgen-Ray Diagnosis of Ileus: Value of Roentgenograms in Simple and Strangulated Obstruction: Experimental Study. A. Ochsner, New Orleans.—p. 719.

Application of Surgery to Hypoglycemic State Due to Islet Tumors of Pancreas and to Other Conditions. E. A. Graham and N. A. Womack, St. Louis.—p. 728.

Studies on Tumor Metastasis: I. Distribution of Metastases in Carcinoma of Cervix Uteri. S. Warren, Boston.—p. 742.

***Fate of Sidetracked Loop of Ileum Following Lateral Anastomosis for Complete, Benign Obstruction:** Clinical Experimental Study. C. E. Holm, Allentown, Pa.—p. 746.

Light and Tar Cancer: Experimental Study, with Critical Review of Literature on Light as Carcinogenic Factor. M. G. Seelig and Zola K. Cooper, St. Louis.—p. 752.

Resistance of Healing Wounds to Infection. J. J. DuMortier, Boston.—p. 762.

Surgical Removal and Histologic Studies of Sympathetic Ganglions in Raynaud's Disease, Thrombo-Angiitis Obliterans, Chronic Infectious Arthritis and Scleroderma. W. McK. Craig and J. W. Kernohan, Rochester, Minn.—p. 767.

***Studies on Bronchial Occlusion by Method of Adams and Livingstone.** A. Blalock and W. M. Raymond, Nashville, Tenn.—p. 779.

Surgical Management of Lip Malignancies. F. Smith, Grand Rapids, Mich.—p. 782.

***Technic of Tubo-Uterine Anastomosis (Implantation) in Interstitial and Isthmic Occlusion.** A. Shafeek, Cairo, Egypt.—p. 786.

Release of Axillary and Brachial Scar Fixation. J. B. Brown, V. P. Blair and W. G. Hamm, St. Louis.—p. 791.

Cannula Gastrostomy and Enterostomy. L. R. Dragstedt, H. E. Haymond and J. C. Ellis, Chicago.—p. 799.

Leiomyoma of Jejunum. C. F. Dixon and J. A. Steward, Rochester, Minn.—p. 801.

Advantages of an Extreme Trendelenburg Position in Operations of Upper Respiratory Tract. J. A. Pettit, Portland, Ore.—p. 805.

Jejunal Ulcer: Analysis of Thirty-Six Cases and Study of Literature. E. B. Benedict, Boston.—p. 807.

***Carcinoma of Transverse Colon.** T. S. Raiford, Baltimore.—p. 820.

***Punch Biopsy in Tumor Diagnosis.** W. J. Hoffman, New York.—p. 829.

Sidetracked Loop of Ileum Following Lateral Anastomosis.—In two cases of complete obstruction of the terminal ileum resulting from adhesions, Holm performed various types of lateral anastomoses without removal of the ileum between the anastomosis and the obstruction. Following the anastomoses the patients developed diarrhea, borborygmus, abdominal distention, marked loss of weight and debility, without impairment of appetite. In each patient complete recovery followed resection of the sidetracked loop, which was elongated, dilated and ulcerated. The author selected the terminal ileum for his experimental study on dogs. The superficial necrosis of the mucosa in the intestine remote from the sidetracked loop indicated a general enterocolitis as the cause of the severe diarrhea in all the animals. The author assumes that a similar condition existed in the two clinical cases and was responsible for diarrhea, which persisted for months after resection of the sidetracked loops. The postoperative signs and symptoms occurring in the dogs were similar to those observed in the two patients prior to resection of the sidetracked loop. Fluoroscopic and roentgen examination aid diagnosis in detecting elongation and dilatation of the sidetracked loop of ileum in patients who exhibit the symptoms and signs of the two clinical cases. Surgeons generally recognize that it is not advisable to permit a blind limb to extend beyond a side-to-side anastomosis. In any lateral anastomosis for permanent complete obstruction, the sidetracked loop corresponds to a blind limb extending beyond the anastomosis. Whenever possible, the sidetracked ileum should be resected at the time the lateral anastomosis is done. If resection is inadvisable because of the condition of the patient, the lateral anastomosis should be done as near the obstruction as possible and should be regarded

only as a first stage operation, to be followed by a resection of the sidetracked loop at a more favorable time.

Studies on Bronchial Occlusion.—Blalock and Raymond employed the method of Adams and Livingstone of producing bronchial occlusion by the local application of 35 per cent silver nitrate in experiments on dogs, puppies and cats. The high death rate in the early experiments was probably due partially to the use of an excess of the silver nitrate solution. Attempts at occlusion of the bronchus of a lobe that contained an embolic pyogenic abscess were unsuccessful. The abscess did not alter the ability of the silver nitrate to close the bronchus of an adjacent lobe. In the experiments in which adhesions between the visceral and parietal layers of pleura had been produced and in those in which a thickening of the mediastinum had been caused by irritants, the single application of silver nitrate did not result in an occlusion of the bronchus. The occlusion of the left lower and the right accessory lobes of dogs did not cause significant alterations in the cardiac output and blood pressure.

Technic of Tubo-Uterine Anastomosis.—Shafeek outlines a technic for tubal implantation. The cervix is dilated to the size of a number 8 Hegar dilator, so that a Bonney insufflator can be inserted without leakage. The insufflator is left in situ. The adhesions are liberated. The uterus and adnexa are delivered through the wound. A sound with a bulbous end is introduced into the abdominal opening of both tubes to determine the extent of their patency and the tube is cut at its innermost permeable point. At least 6 cm. of fallopian tube (ampullary and isthmal) is required for efficient utilization. The isthmal tube, which is the part usually blocked, is liberated from its mesosalpinx up to the cornu where it merges into the short interstitial part. At this junction a circular incision through serosa and muscularis is made until the fibrosed impermeable core that remains of the interstitial mucosa is encountered. This core is gently dissected out from the cornual musculature with a fine knife. The opposite side is treated in a similar manner, and a small dilator inserted in the two openings while the insufflator is manipulated. The fine tracts are then gradually dilated, the dilators passing through the two ends at the same time, until they admit the passage of the whole thickness of the tubes. Two catgut sutures are passed through the inner ends of the cut tubes, on both sides, and are tied. The sutures are then passed through the eyes of two rather long probes, which are guided, in opposite directions, through cornu, uterine fundus and the other cornu to the opposite tube, and out of the abdominal ostium together with the sutures. The sutures are then pulled in opposite directions with the result that the inner part of each cut tube is telescoped entirely into the respective cornu to the degree required. The transuterine and tubal lengths of catgut, left in situ, help to secure permanent continuity, as they remain there for some forty days. Sterile oil is introduced to prevent adhesions. After the operation the uterus is usually in a good position, and the position is insured by the shortening of the mesosalpinx. The permeability can be tested at the time by the Bonney insufflator, which has been left in its original position. In some patients it was found that the tubo-uterine permeability was still present as late as a year and a half after the operation.

Carcinoma of Transverse Colon.—On analyzing 297 cases of carcinoma of the colon, Raiford observed that only twenty-two, or 7.3 per cent, were located between the hepatic and splenic flexures. The clinical features differ little if any from those of carcinomas occurring elsewhere in the intestine. Symptoms frequently simulate those of upper abdominal pathologic conditions, such as gastric lesions or gallbladder disease, and confusion of diagnosis is not rare. Achlorhydria is found in the majority of cases. The diagnosis is made by roentgenograms following both a barium meal and a barium enema. In cases in which the observations are doubtful, the series should be repeated. It is surprising to find that tumors arising from the transverse colon involve the glandular system with relative infrequency. Metastases have a predilection for the liver. More common than metastases, however, is direct extension to the stomach and omentum, thereby causing the condition to be confused with carcinoma of the stomach. The majority of these tumors assume an annular constricting form and cause symptoms of partial obstruction. Histologically,

most of the tumors are of the adenocarcinoma type with secondary mucoid degeneration. This accounts for their tendency to spread to adjacent structures and to increase the operative difficulties. The optimal treatment consists of early radical resection, followed by anastomosis. The surgeon should give particular attention to the amount of intestine resected, the preservation of the blood supply to the stumps, the prevention of tension on the anastomosis, and the method of anastomosis. Lateral anastomosis is to be preferred to the end-to-end method. The isoperistaltic or "thumb" method of anastomosis devised by Bloodgood is an advantageous procedure when sufficient intestine can be obtained without tension. This method allows a possible rupture of the blind ends to take place outside the peritoneal cavity without causing peritonitis. The results of treatment in the author's twenty-two cases have not been gratifying. Five year cures have resulted in only three cases, and cures of shorter duration in the same number. There were twelve deaths, six postoperative and six from inoperability or recurrence. The author believes that the evaluation of early symptoms by the clinician with a resultant early diagnosis and the surgeon's careful attention to the mentioned technical factors should enhance the patient's chances of recovery.

Punch Biopsy in Tumor Diagnosis.—Hoffman describes a new technic for securing biopsy specimens, the advantages of which are that early diagnosis may be obtained at a time when pathognomonic clinical features are not yet developed. It is a minor procedure done under local anesthesia in the physician's office at the time of the first examination. Most patients who refuse the suggestion of an operative biopsy consent readily to a punch biopsy. A solid piece of unchanged tissue is obtained. The piece of tissue is large enough to exhibit the characteristic structure of the portion of the tumor from which it was removed and to furnish material for immediate smear, frozen section or paraffin preparation. The tumor is punctured but once, although additional pieces of tissue may be obtained through the original puncture wound, if desired. The cutting action being positive, the tissue is cleanly cut away, the specimen is not crushed or coagulated, and the normal structural relations, in most instances, are preserved. It is successful in a wide variety of material, whether fluid, semifluid, caseous, soft cellular, densely fibrous or osteoid in character (bone tumors which have eroded the cortex). By means of the punch technic a specimen may easily be obtained from the wall of a cyst, and by means of a syringe fitted to the sheath its contents may be evacuated or opaque mediums injected. The opening in the tumor and the needle track are coagulated before withdrawal of the punch, thus rendering less likely the dissemination of the disease. The author employed this method in a series of 100 tumors. He made successful diagnoses from the material obtained in 93 per cent of the cases.

Tennessee State Medical Assn. Journal, Nashville

26: 137-176 (April) 1933

Fundamental Principles of Gastric Ulcer Therapy. E. R. Zemp, Knoxville.—p. 137.

Limitis Plastica. J. D. Lester, Nashville.—p. 144.

*Thyrototoxicosis. F. B. Bogart, Chattanooga.—p. 150.

Eastern Type of Rocky Mountain Spotted Fever. C. B. Tucker, Knoxville.—p. 157.

Thyrototoxicosis.—Bogart states that all nontoxic goiters requiring treatment for cosmetic reasons or because of pressure should be treated surgically. Nontoxic adenoma in persons more than 30 years of age is best removed surgically on account of the chance of malignant change. Malignant thyroids are best treated by radiation alone. Toxic adenoma can be cured by irradiation but is best treated by surgery because of the quicker results. Mild and moderately toxic goiters are easily and efficiently treated surgically because results can be more quickly obtained, but it should be remembered that these cases can also be treated by radiation and that in many of them equally good end-results are obtained. When associated diseases or economic or social reasons make operation inadvisable, a four months trial of radiation is justified and gratifying results are often obtained. In extremely toxic cases in which operation would endanger life, irradiation will often prove effective in clearing up the symptoms, and when a cure cannot be produced the case may be rendered operable. Irradiation is justified in patients who refuse operation.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Pickett-Thomson Research Lab., London

8: 1-738 (Dec.) 1932

The Common Cold. D. Thomson and R. Thomson.—p. 1.

British Medical Journal, London

1: 685-730 (April 22) 1933

Observations on Nutrition in Relation to Anemia. L. S. P. Davidson, H. W. Fullerton, J. W. Howie, J. M. Croll, J. B. Orr and W. Godden.—p. 685.

*Experimental Shock, with Especial Reference to Anesthesia. R. J. S. McDowall.—p. 690.

*Insulin and Glucose in Treatment of Heart Disease, with Especial Reference to Angina Pectoris. K. S. Smith.—p. 693.

Etiology of Acute Rheumatism. B. Schlesinger.—p. 697.

Unusual Case of Lymphatic Leukemia. W. E. Cooke.—p. 698.

Experimental Shock.—McDowall states that experimental shock may be divided into several varieties, which, apart from the variety produced by hemorrhage and cardiac failure, may be divided into chemical and nervous. The chemical variety is typified by histamine shock experimentally, and clinically by a delayed shock associated with gross destruction of tissue. This variety is enhanced by anesthetics. The nervous varieties may result from physical damage to the vasomotor center or its efferent paths, from afferent impulses leading to a loss of carbon dioxide (acapnia), or from inhibition of the center. Acapnia and inhibition account for the shock that follows immediately on injury. Shock dependent on afferent impulses is prevented by deep anesthesia and is reduced by morphine. The chemical and nervous varieties may coexist and enhance each other.

Insulin and Dextrose in Treatment of Heart Disease.

—Smith gives an account of the successful treatment by insulin and dextrose of more than forty patients suffering from intractable angina pectoris. He gives reasons for believing that anginal pain is related to faulty carbohydrate metabolism in the heart. He believes that insulin acts immediately by its stimulating effect on glycogen metabolism in the heart, and progressively by promotion of the combustion of fat, this process leading to resolution of early atheromatous changes in the coronary arteries. In his application of dextrose-insulin therapy in angina pectoris, the patients continued taking any remedies that they had previously been taking. They continued in the same regimen of work or rest during, as before, treatment. Records of frequency, severity and duration of attacks were kept for the period prior to, during and after treatment. The method consisted in giving 5 units of insulin before breakfast and before the evening meal, each dose being followed by 30 Gm. of dextrose taken with the meal. This treatment was administered over periods varying from two to seventeen weeks.

Guy's Hospital Reports, London

83: 129-256 (April) 1933

Studies on Tumor Formation: XI. Causation: Reaction and Environment. G. W. Nicholson.—p. 131.

Report on Treatment by Radium at Guy's Hospital During 1930 and 1931. Edited by F. J. Steward.—p. 159.

Id.: Cases of Malignant Disease Treated with Radium in General Surgical Wards During the Years 1930 and 1931. F. J. Steward and A. Simpson-Smith.—p. 160.

Id.: Cases Treated with Radium in Gynecologic Department. J. B. Blaikley.—p. 166.

*Disease of Aortic Valves. M. Campbell and J. W. Shackle.—p. 168.

"Studies in Bright's Disease, No. VII": I. Histologic Sections from Kidneys of Three Cases of "Bright's Disease" Originally Described by Dr. Bright. A. A. Osman.—p. 185.

Parathyroid Tumor with General Symptoms But No Bony Deformities. J. F. Venables.—p. 194.

*Influenzal Meningitis. S. M. Silverstone.—p. 200.

Blood Pressure in Asthma. L. J. Witts.—p. 213.

Renal Dwarf: Under Observation Throughout the Whole of the "Late Rickets" or Renal Rickets Stage. H. Barber.—p. 220.

Carcinoma of Kidney: Case. C. R. E. Freezer.—p. 228.

Hernioplasty. P. Turner.—p. 233.

Fractured Pelvis, Followed by Unusual Complications: Case. D. W. C. Northfield.—p. 252.

Disease of Aortic Valves.—Campbell and Shackle observed 296 cases of disease of the aortic valves, 200 of which were due to rheumatism, 55 to syphilis, 20 to atheroma and 21 to miscellaneous causes. In most of the rheumatic cases there was a clear rheumatic history, but in 23 without such a history this

diagnosis was made on the presence of mitral stenosis. If the cases with obvious mitral stenosis were excluded, the percentage figures became 52 rheumatic, 28 syphilitic, 10 atheromatous, and 10 per cent all other causes. Even after excluding all those with any evidence of mitral stenosis, rheumatism still remained the commonest cause of disease of the aortic valves. Of each six rheumatic patients three had aortic incompetence and mitral stenosis, one had these and aortic stenosis as well, one had aortic stenosis and incompetence, and one had aortic incompetence alone. When there was no mitral disease, there were two men for each woman; when there was mitral disease, there were three women for each two men. They first came under observation at all ages, least commonly before 10 or after 50. There is so little difference between those with and those without aortic stenosis that its presence must depend on the severity and nature of the attack rather than on the length of time that has elapsed. Pure aortic stenosis was rarely found and, as far as could be judged from the pulse pressure, the stenosis was relatively unimportant compared with the regurgitation, even when the signs were well marked. Among the syphilitic patients there were three men for each woman, nearly 80 per cent being between 40 and 60 years of age. Aortic stenosis was never present. The average pulse pressure was much greater in the syphilitic patients than in the rheumatic, being 110 instead of 70. Nearly all the atheromatous patients were men between 50 and 80. Aortic stenosis was more important and more often present, and the signs of regurgitation were often absent; the pulse pressure was not much less than in the rheumatic patients, but the diastolic pressure was much higher, being 92 instead of 67. Auricular fibrillation was present in 30 per cent of those who also had mitral stenosis, but only in 8 per cent of the rheumatic patients without it, and in 3 per cent of the others. Left ventricular preponderance was found in about half the electrocardiograms of those with pure aortic disease, the remainder being within normal limits. The T waves were inverted, most often in lead I, in about one fourth of the rheumatic patients and in about one half of the others. The prognosis was enormously better in the rheumatic group. The average duration of life after the development of aortic incompetence was probably twenty years, and more when excluding those who died quickly from active rheumatic carditis. In the syphilitic group it was not much more than two years after the development of symptoms, a few patients living for eight years.

Influenzal Meningitis.—Silverstone points out that meningitis caused by the influenza bacillus bears no relation to epidemic influenza. It is caused by a strain of *Haemophilus influenzae* that is characterized by a high degree of virulence and pathogenicity and by a serologic homogeneity that distinguishes it from other strains of the species. In its morbid anatomy, the disease is characterized by a massive purulent meningitis and by complications that are both numerous and varied, the most remarkable of all being suppurative joints. Clinically, it presents no features that distinguish it from other forms of acute suppurative meningitis, and the diagnosis depends entirely on the demonstration of the organism in the cerebrospinal fluid. The prognosis is grave and the mortality is high. In its nature, the disease is an influenzal septicemia that tends to localize in the meninges or, less commonly, in other parts of the body. The causal organism is most commonly found in the upper or lower respiratory passages and may occasionally produce local disease in this region before invading the blood stream. Apart from lumbar, cisternal and ventricular puncture, more specific measures, such as drugs, vaccines and antiserum, have been tried by several workers, but there is no evidence that they have been of any value. Recent studies show that previous failures in serum treatment have been due to the lack of complement in the cerebrospinal fluid of patients with influenzal meningitis, and it is suggested that complement be administered with the antiserum by intrathecal inoculation (Ward and Wright).

International Journal of Psycho-Analysis, London

14: 183-296 (April) 1933

Ferenczi's Relaxation Principle. F. Alexander.—p. 183.

Psychology of Screaming. M. N. Searl.—p. 193.

Psychologic Considerations in Alcoholic Hallucinoses: Castration and Dismembering Motives. W. Bromberg and P. Schilder.—p. 206.

Some Unconscious Mechanisms in Pathologic Sexuality and Their Relation to Normal Sexual Activity. Melitta Schmideberg.—p. 225.

Irish Journal of Medical Science, Dublin

No. 88: 145-192 (April) 1933

- Some Aspects of Control of Infectious Disease in a Children's Hospital. J. P. Shanley.—p. 145.
- *Susceptibility of Laboratory Animals to Experimental Infection with Brucella. S. G. Rainsford.—p. 150.
- The Lighting of Schools. C. Bastible.—p. 164.
- Prevention of Maternal Morbidity and Mortality. B. Solomons.—p. 171.
- *Pituitary Extracts in Labor. O. Browne.—p. 179.

Alcaligenes Infection.—According to the experiments of Rainsford, animal inoculation might be found of value in differentiating abortus strains from melitensis strains, and especially so in the separation of porcine from bovine strains of *Alcaligenes abortus*. At present the two most reliable methods, namely, the production of hydrogen sulphide on liver agar (Huddleson, 1927) and the serologic method of Pandit and Wilson (1932), succeed only in dividing *Alcaligenes* into two groups, an abortus group and a melitensis group. In both these methods, porcine and bovine strains fall into one common group, the abortus group. It is impossible, therefore, to distinguish porcine strains from bovine strains by either method. In the author's experiments it would appear that porcine and melitensis strains fall into one group, while the abortus bovine strains remain separate. It will therefore be easily understood why animal inoculation may be found of value in the difficult problem of identifying these porcine strains of *Alcaligenes abortus*. The Aleppo hamster would appear to be more susceptible than guinea-pigs to intraperitoneal injection with *Alcaligenes*, since abortus strains found to be avirulent for guinea-pigs successfully infected these hamsters. The author suggests that intraperitoneal injection of these animals with material such as blood or urine from suspected cases of undulant fever or milk of possibly infected animals might be found of value in the diagnosis of *Alcaligenes* infections. At present there is no satisfactory method of detecting urinary carriers among convalescents, and such a means might be successful. To detect whether an animal injected with such material had been infected, periodic examination of the blood of the animal for the presence of agglutinins could be relied on for accurate information. However, since all hamsters successfully infected developed a "Straus" reaction rapidly, testicular puncture and culture of aspirated fluid might be even more helpful. The author shows that when cultures were made from the seminal fluid of infected hamsters they were invariably successful in isolating the causal organism. The frequency with which the ovaries of female guinea-pigs were attacked would seem to support the view already expressed by the author (1932) that abortion in cattle and other animals is due not merely to an endometritis but to an actual invasion of the ovary itself, the endometrial changes being largely secondary to a destruction of corpus luteum. This theory is supported by the fact that infection in swine is more often shown by a failure to conceive rather than by actual abortion. Infection in goats seldom produces abortion, but when the goat does abort it is frequently found to remain sterile afterward.

Pituitary Extracts in Labor.—Browne recommends the judicious use of pituitary extracts in labor but states that indiscriminate application is to be avoided. He considers only the effects of the posterior lobe preparations and confines himself to the results produced on the uterus. Physiologically, the effect of liberation of posterior lobe extract into the general system produces increased tone and contraction in smooth muscle. This is marked in relation to uterine muscle but may be seen also in the bladder and in the walls of the intestine and of the blood vessels. The periods of labor at which stimulation can be employed are the stage of dilatation, the stage of expulsion, or after the birth of the infant. Obstruction must be excluded before pituitary preparations are administered. In the presence of a normal and fixed presentation, the membranes being intact, pituitary extracts are a safe and excellent remedy for tardy onset of labor. They will prevent the discomfort of threatening labor for two or three days before true pains commence. The injection of pituitary extract is employed as an adjunct in the induction of labor by puncture of the membranes. This is not without fetal risk; it is best used in cases of accidental hemorrhage or induction of labor following premature death of the fetus. In accidental hemorrhage, the important factor in the induction of labor is to expedite

delivery and emptying of the uterus. In placenta praevia, it is of the greatest importance to avoid treatment by oxytocics. Occasionally labor does not commence within from twenty-four to forty-eight hours after version has been completed. In placenta praevia in which version has been performed, stimulation should be avoided. During the second stage of labor, prolonged delay after puncture of the membranes may safely be treated by the injection of 0.25 cc. of a standard pituitary preparation, if the presentation and the fetal heart are normal. Pituitary extracts and ergot preparations are, acceptedly, of the greatest value after birth of the placenta and membranes. They act best when given simultaneously and act most efficiently when used in the control of postpartum hemorrhage. Neither of these preparations should be given until complete birth of the placenta and membranes has taken place.

Lancet, London

1: 841-892 (April 22) 1933

- Physiology of Gallbladder and Its Functional Abnormalities: II. Disorders of Motility. C. Newman.—p. 841.
- *Treatment of Puerperal Septicemia with Antitoxic Serum. W. T. Benson and A. L. K. Rankin.—p. 848.
- *Bilateral Obliteration of Radial and Carotid Pulses in Aortic Aneurysm. H. Cohen and T. B. Davie.—p. 852.
- Ketogenic Diet: Nature of Bactericidal Agent. A. T. Fuller.—p. 855.
- Chloroma: Account of Four Cases. J. Bamforth and J. L. Edwards.—p. 857.
- *Value of Salicylates in Prevention of Rheumatic Relapses. C. B. Perry.—p. 861.

Antitoxic Serum in Puerperal Septicemia.—In an attempt to ascertain the therapeutic value of antitoxic serum in puerperal septicemia due to infection with *Streptococcus haemolyticus*, Benson and Rankin confirmed the clinical diagnosis of septicemia in 114 patients by the isolation of β -hemolytic streptococci in pure culture from the blood during life. Uterine cultures were examined in eighty-eight patients, eighty-two of whom showed the presence of β -hemolytic streptococci. In order to avoid certain fallacies, the authors gave careful attention to age periods, parity and day of illness on which the patient first came under hospital treatment. To exclude possible variations in the virulence of the infecting streptococcus, a control case was selected for each patient treated with serum. Cases of infection following abortion and depressing factors, such as undue loss of blood, prolonged labor and gross local trauma, have been about equally distributed in the two groups. Inherent resistance to infection is impossible to gage. By the application of these principles the results obtained in the fifty-seven patients treated with serum may be regarded as reasonably comparable to the observations in the fifty-seven cases in which serum was not given. Puerperal antistreptococcus serum was administered to twenty patients, and concentrated streptococcus antitoxin was used in the other thirty-seven patients. The intravenous route was adopted in twenty-four; in eighteen serum was injected both intravenously and intramuscularly, and the intramuscular route was employed in fifteen cases. For intravenous injection, 40 cc. of serum was diluted with 16 ounces (480 cc.) of saline solution. The total dose of serum varied from 10 to 330 cc. A sharp immediate reaction followed intravenous injection in many patients, but no serum fatalities occurred. Rashes, pain in the joints and other manifestations of serum disease gave rise to considerable discomfort in one fourth of the patients who survived more than a week. Epinephrine was invariably injected with the serum. The acid test of the value of serum in hemolytic streptococcal septicemia lies in its power to prevent a fatal issue. The mortality rate in the fifty-seven patients treated with serum was 75 per cent. This cannot be explained by an undue delay in the administration of the serum, as 70 per cent of the patients died who received serum treatment on the first or second day after onset of the symptoms as compared to 75 per cent receiving treatment on the fourth day or later. Temporary improvement followed the injection of serum in several patients; serum therapy may have prolonged the agony in a few, but in many no therapeutic effect could be ascertained.

Bilateral Absence of Pulse in Aortic Aneurysm.—Cohen and Davie report a case of aortic aneurysm associated with bilateral obliteration of radial and carotid pulses in which an overgrowth of subintimal connective tissue appeared to be the cause of the obliteration of the first part of the arterial trunks

concerned. It does not necessarily follow that this process of proliferation was the primary factor in the development of the condition. In fact, having regard to the extensive atheromatous lesions present in the aneurysmal sac, and with Broadbent's case as a precedent, the authors are inclined to believe that the proliferation of subintimal connective tissue followed or at most developed coincidentally with atheromatous narrowing of the arterial orifices. The absence of a similar obliterative proliferation of connective tissue in Broadbent's case is probably associated with its nonsyphilitic basis. Such syphilitic endarteritis obliterans is admittedly rare in large arteries; but it is possible that, subsequent to the marked narrowing of the orifices of the vessels by plaques of associated atheroma, the tendency to proliferation of the subintimal connective tissue, manifested in small arteries involved in syphilitic lesions, may here too have become active. This suggestion will remain unproved until more cases at intermediate stages of development of the condition have been discovered and described.

Salicylates in Rheumatic Relapses.—Perry treated forty-one children suffering from rheumatic heart disease with acetylsalicylic acid. The dose was 10 grains (0.65 Gm.) three times a day for twelve months. The patients were seen every three or four weeks and observations were made on their symptoms, physical signs and weight. The authors observed that the body weight is a valuable guide to the progress of these cases. Relapses of a rheumatic nature, i. e., chorea, arthritis or carditis, were observed in 12.1 per cent of the treated patients as compared with 17.9 per cent of the 106 controls. The abnormal physical signs in the heart decreased or disappeared in 34 per cent of the treated cases as compared with 24.5 per cent of the controls. Of the treated cases, 12.1 per cent showed an increase in the physical signs as compared with 8.4 per cent of the controls. For all ages the average gain in weight showed no significant difference in the two groups. In regard to general health, the parents of some of the patients stated that there was an improvement while others stated that the children were no better.

South African Medical Journal, Cape Town

7: 241-280 (April 22) 1933

Significance of Septic Foci in General Practice. C. E. L. Burman.—p. 243.

Accidental Injuries. G. J. C. Smyth.—p. 248.

National Invalidity Insurance. C. F. B. Wall.—p. 251.

Changing Aspect of Medical Practice. N. M. MacFarlane.—p. 253.

Modern Advances in Public Health Administration in Urban Native Areas. A. J. Milne.—p. 255.

Investigation of Unusual Case of Generalized Edema. H. L. Heimann and I. Gross.—p. 259.

Gynécologie, Paris

32: 249-304 (May) 1933

*Clinical and Diagnostic Value of Hysterosalpingography. S. D. Savelieva and V. K. Malinovskaja.—p. 249.

Value of Weight Curve for Determining Arrest, Persistence or Recurrence of Epithelioma of Uterine Cervix After Treatment. P. Petit-Dutaillis.—p. 276.

Hysterosalpingography.—Savelieva and Malinovskaja discuss hysterosalpingography on the basis of 200 cases. A study of the vaginal flora, of the condition of the uterus and of its adnexa must precede hysterosalpingography. The intervention is contraindicated in manifest infection and acute or subacute inflammation of the genital tract and during the menstrual period; chronic inflammation of the adnexa or the existence of adhesions is not a contraindication. Iodized poppy-seed oil is introduced slowly under minimum pressure and without an anesthetic, as the reaction of the patient indicates when a sufficient quantity of oil has been injected. No complications were observed. The authors consider hysterosalpingography of great value in gynecology, not only for determining the permeability of the tubes but also for extending and making more exact the indications for surgical intervention on the tubes and the uterus in case of sterility, hemorrhages, amenorrhea and malformation and tumors of the uterus and the adnexa. It limits sharply the indications for salpingostomy in the treatment of sterility, thereby extending the indications for implantation of tubes and ovaries in the cornu of the uterus. Hysterosalpingography limits the operation of supravaginal amputation of the uterus and roentgen castration of women in cases of roentgen diagnosis of polyps and marked hyperplasia of the

endometrium requiring only fundic hysterectomy or curettage. Hysterosalpingography gives an accurate idea of the details of malformation of the genital apparatus and of the possibilities of treatment. It also has a therapeutic value owing to its mechanical action. In order to avoid errors of diagnosis and to judge the therapeutic effect, the roentgenography should be repeated after from fifteen to twenty minutes, after twenty-four hours, and sometimes several months later.

Archivos Españoles de Pediatría, Madrid

17: 161-224 (April) 1933

*Treatment of Essential Nocturnal Enuresis by Solution of Pituitary. J. L. Morales González.—p. 161.

*Dry Gangrene of Foot Complicating Measles: Case. J. Garrido Lestache.—p. 179.

Postvaccinal Encephalitis: Fatal Case. F. Ramirez.—p. 184.

General Prevention of Diseases During All Periods of Infancy and Childhood. J. García del Diestro.—p. 189.

Treatment of Essential Nocturnal Enuresis.—Morales González gives injections of solution of pituitary in progressive doses, starting with 0.5 cc. and increasing slowly up to 1 cc. of the solution for each injection, and in some cases up to 2 cc. Not less than three days should elapse between injections. The total number of injections is from three to eight. If any recurrence appears, the administration of two or three more injections will probably produce a complete cure. The injections should be given sublingually. The results of the treatment are not satisfactory if the injections are given by the nasal or oral routes. The author reports his results in twenty-five cases. All children in the group presented a condition of deficient nutrition and poor general physical development but without mental backwardness. Of the twenty-five cases there were 64 per cent of recoveries, 20 per cent of improvements, and in 16 per cent the patients did not react to the treatment.

Gangrene of Foot Complicating Measles.—Garrido Lestache says that surgical complications during measles are rare. The gravest is gangrene caused by acute arteritis followed by thrombosis. The condition is not one of embolism. The heart of the patient is normal. Acute arteritis in these cases represents an arterial localization of measles, the mechanism of production of which is similar to that which causes the more frequent appearance of phlegmon, abscess or other articular or osseous lesions complicating measles. The clinical picture is characterized by sudden onset with intense pain and loss of functional activity of the lower extremities, followed by symptoms of lack of circulation in the leg and gangrene. The treatment aims to keep the patient in the best general condition by means of tonics and local application of low heat until the appearance of the line of demarcation, which indicates surgical removal of the gangrenous segment of the leg. The author reports the case of an infant, aged 13 months.

Prensa Médica Argentina, Buenos Aires

20: 1285-1334 (June 14) 1933. Partial Index

Ectopic Spleen with Retroperitoneal Pedicle: Case. E. Finochietto and J. J. Beretervide.—p. 1285.

*New Method for Roentgen Study of Stomach, Duodenum and Gallbladder. M. Estiú.—p. 1292.

Lipoma of Tongue: Case. A. H. Roffo.—p. 1319.

Tuberculous Meningitis in Infant: Case. R. A. Rivarola.—p. 1322.

Roentgen Examination of Stomach, Duodenum and Gallbladder.—Estiú presents a new method of roentgen examination of the stomach, the duodenum and the gallbladder, consisting in changing the position of the patient by inflections of the trunk to the left and to the right during the examination. During the inflections, the organs of the upper part of the abdomen and of the right superior quadrant are displaced upward and to the side opposite to that of the inflection, permitting a clear visualization of the organs and a particular projection of their shadows in the roentgenogram. The author presents the roentgenograms in fourteen cases with their diagnostic interpretation. The inflection to the left causes displacement of the antropyloric region and of the duodenal bulb to the right. It stimulates and reinforces peristalsis, accelerates the evacuation of the opaque substances from the stomach into the duodenum and permits a perfect visualization of the distal portion of the stomach. With the organs displaced during the left lateral inflection, any pathologic changes in the lesser curvature and in the duodenojejunal angle are detectable. The inflection to the right displaces the stomach upward and to the

left, leaving uncovered for visualization the duodenal quadrant and causing the dissociation of its shadow from those of the duodenal arch and of the duodenojejunal angle. The abnormal displacement of the organs to the right during the inflection to the left, and the limited displacement of the organs during the inflections, both to the right and to the left, point out the presence of disturbances of the motility of the stomach. The method of lateral inflections of the trunk is of value in the detection of pathologic changes in the contour of the stomach and of defects of filling of the organs with the opaque substances, and in the interpretation of certain spots which are observable in the roentgenogram when taken in the standard position. It is of value in the diagnosis of adhesions of the stomach and of ulcers of the duodenum. The gallbladder shows pendular oscillations during the lateral inflections. It is clearly visualized during the inflection to the left, showing a good impregnation of its neck and of the cystic and common bile ducts by the opaque substance. Its shadow appears as if it were dissociated from that of the ribs and of the vertebral column in cases in which there is a superposition of the two shadows in the examination of the patient in the standard position. A diagnosis of adhesions of the gallbladder was made in four cases and of calcified concretions of the ribs in one case in which a diagnosis of calculi of the gallbladder had been made with the patient in the standard position.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

100: 1-140 (June 15) 1933

- *Blood Picture of Morphine Addicts. M. Rinkel.—p. 1.
- Behavior of Corpus Geniculatum Externum and of Area Striata in Unilateral Peripheral Blindness. B. Hechst.—p. 19.
- Problem of Manic Depressive Psychoses and of Pyknic Thymopathic Constitution. K. H. Stauder.—p. 32.
- Provocation of Endogenic Psychoses by Incipient Paralysis. O. Oeschey.—p. 46.
- Histopathology of Symptomatic Psychoses. F. Sioli.—p. 80.
- Alzheimer's Disease with Pick's Atrophy of Parieto-Occipital Lobe. M. Liebers.—p. 100.
- *Importance of Blood Groups in Malarotherapy. I. Somogyi and L. von Angyal.—p. 111.
- Visual Fixation, Disturbances in Consciousness and in Tonus: Symptomatology of Postencephalitic Attacks. Kate Hermann.—p. 116.

Blood Picture of Morphine Addicts.—In studies on the leukocytic blood pictures of morphine addicts during the withdrawal period Rinkel found that the initial stage is characterized by a relative and, generally, an absolute increase in the neutrophils, also by relative but not always absolute lymphopenia, by hypo-eosinophilia or aneosinophilia, and by a changing number of monocytes. The stage of metabolic fluctuations, which develops about the middle or the end of the first week of withdrawal, is characterized by fluctuations in the neutrophils and lymphocytes. In some cases a considerable eosinophilia develops during this phase of the withdrawal treatment. This stage lasts comparatively long, probably in excess of the sixth week. During the third stage, lymphocytosis is the main symptom, whereas the eosinophils have reached by now a more or less normal status. It is frequently impossible to study this phase, because the patients are discharged before this time. The author discusses various theories of the pathogenesis of these changes but thinks that a definite solution is as yet impossible. At any rate, these fluctuations indicate that the biologic equilibrium of the organism of the morphine addict is disturbed for a long period. The treatment cannot be considered complete with the disappearance of the clinical symptoms but should be continued until the biologic equilibrium has been reestablished, which in some cases will require more than sixty days.

Blood Groups and Malarotherapy.—Somogyi and von Angyal point out that certain manifestations developing in the course of malarotherapy of dementia paralytica indicate a change in the biology of the malarial plasmodium. For instance, following vaccination with the tertian type, a quotidian type of fever, or fever types of twenty-eight, thirty-two or thirty-six hours may develop. It has also been observed that two persons who have been inoculated at the same time and with the same strain have a different incubation period and develop a different type of fever. The authors cite observations which indicate that the important factor in such irregularities is not the plasmodium but conditions in the inoculated person, such as whether the patient has previously undergone malarotherapy,

and how much time has elapsed since his last course of arsphenamine. It is probable that, in addition to these exogenic factors, endogenic factors play a part, such as the immunobiologic characteristics of the blood and the blood groups as the carriers of iso-agglutinins and agglutinogenic substances. The authors determined the blood groups of 100 patients with dementia paralytica who underwent malarotherapy, and also the blood groups of the donors. It was found that the malarial infection is not influenced by the blood group of the patient. The blood group identity or diversity of the inoculated person and the donor has no independent significance from the point of view of malarotherapy. However, agglutination or its absence between the blood of the donor and of the recipient has a noticeable influence on the incubation period, in that the incubation period is shortened by ninety-three hours in case of negative agglutination. The type of fever, the course of the fever attacks and the incidence of spontaneous cessation of fever are not influenced by the blood group relationship of donor and recipient.

Deutsche medizinische Wochenschrift, Leipzig

59: 911-948 (June 16) 1933

- Value of Examination of Eyes for Matrimonial Advice, for Choice of Occupation and for Determination of Suitability for Official Positions. L. Heine.—p. 911.
- *Vaccination Treatment of Alcaligenes Abortus Infection in Human Beings. K. Poppe.—p. 913.
- *Differential Diagnosis of Cholelithiasis and Tumor. G. Lepehne.—p. 916.
- Present Status of Acquired Diseases of the New-Born. E. Thomas.—p. 919.
- Arteriothromboses. G. Scherk.—p. 921.
- Is Clauberg's New Diphtheria Culture Medium Superior to Löffler's Culture Medium? P. Schmitt.—p. 924.
- Nonsurgical Mobilization on Gonorrheal, Nonosseous Ankylosis of Knee Joint. Hohmann.—p. 924.
- *Ileus Following Eating of Poppy Seed. H. Zielke.—p. 925.
- Unusual Twin Birth. W. Dracklé.—p. 926.
- Elastic Adhesive Tape Bandages in Varicose Veins for Prevention of Thromboses Following Operations in Puerperium. K. E. Fecht.—p. 926.
- Value of Tests in Allergic Diseases. Lucie Adelsberger.—p. 927.

Vaccination Treatment of Alcaligenes Abortus Infection.—In his evaluation of specific therapy, Poppe expresses the opinion that immune and convalescent serums are of no particular value, but he thinks that treatment with vaccines deserves consideration. He reports experiments with a vaccine containing ten million killed organisms in each cubic centimeter. The vaccine is administered intramuscularly. The number of injections is generally from eight to ten, with intervals of two or three days between the injections. The initial dose is usually five million organisms, and the doses are gradually increased to reach twenty million. If it becomes necessary, the series of vaccinations may be repeated. Reports of twenty cases in which this vaccine was employed show that the results were favorable in sixteen cases. The vaccine was administered only in those patients in whom the existence of an Alcaligenes abortus infection had been corroborated by agglutination and by complement fixation tests. The impression was gained that the vaccination is effective only in those instances in which a considerable reaction becomes manifest. The author mentions several other vaccines that have been tried in Alcaligenes abortus infection. He determined in animal experiments that a vaccine has an adequate protective value only if its antigenic capacity is as near as possible to the living bacterial protein. Though living bacteria have the greatest antigenic action, they cannot of course be employed in human subjects, but the aim should be to employ vaccines in which the bacterial antigen differs from that of the living organisms as slightly as possible, and the author asserts that his vaccine fulfils this requirement.

Differential Diagnosis of Cholelithiasis and Tumor.—According to Lepehne, the differentiation between lithiasis and malignant tumor of the gallbladder is not always simple. Cholelithiasis and cholecystitis may show high sedimentation values as does cancer of the gallbladder. A hard swelling of the gallbladder, an enlarged knotty liver and inflammatory ascites are not always demonstrative. The most important symptom for the differential diagnosis is the tumor of the gallbladder. However, a hard and smooth tumor is not necessarily a carcinoma, because chronic dropsy of the gallbladder, chronic empyema of the gallbladder or its tense filling with calculi may produce this symptom. More characteristic of a malignant tumor than the hard smooth gallbladder is a hard knotty

gallbladder. But this symptom frequently does not become manifest until a rather advanced stage has been reached. In patients with icterus, the intermittent or permanent character of this symptom has considerable differential diagnostic significance. Intermittent icterus generally favors calculi against tumor, but the author illustrates in a case report that a beginning malignant tumor may simulate cholelithiasis with intermittent icterus and accompanying cholangitis. This case was not decided until a laparotomy was done. How long this intervention may be postponed, when a calculus of the choledochus seems probable, has been answered variously. If, as in the reported case, fever and chills indicate threatening septic infection, laparotomy should be done at once; in other cases, surgical intervention should not be too precipitate.

Ileus Following Eating of Poppy Seed.—In two patients, a woman, aged 55, and a man, aged 63, with the symptoms of ileus, Zielke at first was unable to determine the cause of the intestinal occlusion, but then it was found that both patients had eaten large amounts of poppy seed on the day preceding the onset of the symptoms. In the first patient the unsuccessful conservative treatment was followed by an operation, but the woman died as the result of peritonitis. In the second patient, who was observed several months later, the experiences with the first patient warned against an operative intervention, and this patient recovered following conservative therapy. The author thinks that either the ileus was mechanical, that is, produced by resorption of water and by swelling of the poppy seeds, or the alkaloid content of the poppy seed led to intestinal paralysis. Little is known about the toxicity of poppy seed, but it is usually assumed that the ripe seeds do not contain alkaloids.

Deutsche Zeitschrift für Chirurgie, Berlin

240: 663-794 (June 26) 1933

- *Untoward Symptoms After Brain Operations. M. Ernst.—p. 663.
Effect of Postoperative Respiratory Disturbances on Lungs. W. Capelle and E. Fulde.—p. 673.
Suppurative Processes of Floor of Mouth and Deep Sutures of Skull. M. Wassmund.—p. 681.
- *Guiding Principles in Biliary Surgery. Fedoroff.—p. 695.
Animal Experiments in Extrahepatic Biliary Tracts. W. Brackertz.—p. 707.
Pathogenesis and Treatment of Gallstone Ileus. L. Duschl.—p. 724.
Unusual Posttraumatic Observations in Patella. H. R. Paas.—p. 734.
Winter Sports Injuries. I. G. Knoflach.—p. 743.
Injuries in Coasting. I. G. Knoflach.—p. 751.
Methods for Objective Recording of Gait. G. Kuntscher.—p. 762.
Gangrene of Extremity in Fractures of Leg. O. von Susani.—p. 771.
Complete Transverse Fracture of Third Lumbar Vertebra: Case. P. Deuticke.—p. 778.
Contribution to Pyelography in Traumatic Renal Lesions. G. Rintelen.—p. 782.
Question of Pseudomoxoma. H. Gangl.—p. 788.
Volvulus of Stomach. W. Bal.—p. 791.

Untoward Symptoms After Brain Operations.—Ernst reports observations on postoperative pulse and temperature in 100 patients after a brain operation. The pulse and temperature curves were found to parallel definitely the damage done to the cerebral substance. The postoperative symptom complex is due to edema of the brain, which is treated by decompressive measures. The results are promising only when treatment is applied early. Careful observations of the pulse and temperature during the first week are therefore urged by the author as a valuable method in early recognition of approaching dangerous states.

Guiding Principles in Biliary Surgery.—Fedoroff states that the mortality after operations on the biliary tracts, as based on large statistics, amounts to 9 per cent. The mortality of conservatively treated patients having gallstone disease, based on the universal literature, amounts to 15 per cent. Operations performed during the acute stage carry a mortality twice as great as that attending on operations performed in the interval. The demand for an immediate operation, as in acute appendicitis, is not justified, because the operation is more serious. Operations during an attack should not be performed except for an urgent indication. Mortality in younger patients, up to the age of 40 years, and of those operated on in the interval, amounts to 1 or 2 per cent. Icterus is the gravest complication. Blood transfusion, next to dextrose insulin, proved to be the most valuable preoperative measure in jaundiced patients. Primary closure of the abdomen is permissible only when com-

plete peritonealization of the liver bed, of the stump of the cystic duct and of the suture line of the common bile duct is possible, and when the papilla of Vater is patent. Kehr's T drainage tube is best adapted for the drainage of the choledochus. Operations for biliary fistulas are difficult and uncertain. The author finds the method of extra-abdominal rubber tube prosthesis between the fistula and the intestine most satisfactory. Anastomosis between the gallbladder and the stomach or the duodenum is indicated only in stenosis of the choledochus or of the papilla and in cancer, but not in so-called stasis of the gallbladder. The cause of recurrent pain is seen in particular irritability of the vegetative nervous system.

Deutsches Archiv für klinische Medizin, Berlin

175: 263-384 (June 17) 1933

- Significance of Intracutaneous Test for Diagnosis and Epidemiology of *Alcaligenes Abortus* Infection. Lerche and F. Roth.—p. 265.
- *Intra-Auricular Conduction Disturbances in Human Subjects: Case of Slow, Cyclic Changes in Shape of P Wave in Electrocardiogram in Sinus Rhythm. A. Falkiewicz.—p. 273.
- Myositis and Eosinophilia: Aspects of Their Relations. K. Singer.—p. 281.
- Diverticula and Diverticular Formations of Stomach. Gutzeit and Kuhlmann.—p. 291.
- Metabolic Investigations with Glycine in Progressive Muscular Dystrophy. S. Kostakow and A. Slauck.—p. 302.
- *Acetonitrile Test in Cardiac Neurosis. G. Budelmann.—p. 311.
- Diagnosis and Prognosis of Diphtheric Circulatory Impairment by Electrocardiogram. K. Hartl and W. Richter.—p. 320.
- Hematologic Contributions to Problem of Malignant Diphtheria. H. Mommsen.—p. 345.
- Polycythemia and Disturbances in Splenic Circulation: Pathogenesis of Erythremia. K. Singer.—p. 355.
- Action of Fourth Somatic Substance Reducing Blood Pressure on Circulation of Human Beings. O. Bickenbach.—p. 366.
- Behavior of Blood Sugar Following Administration of Alcohol. E. Kolta.—p. 376.

Intra-Auricular Conduction Disturbances.—Falkiewicz describes electrocardiographic curves with a cyclic, slow change in the auricular wave. It changes gradually from negative to positive and vice versa. The author cites animal experiments which seem to indicate that this is the result of a change of the auricular regulation center; that is, at times a different auricular regulation center takes over the steering from the sinus node, after which the sinus node once more takes the lead. However, the constant length of the auricular periods and the slow changes in the outlines of the P wave contradict this. The interference of two auricular centers is another possibility, but this appears unlikely. Consequently the author assumes a continuous sinus rhythm and ascribes the change in the outline of the P wave to an abnormal spreading of the stimulus from the sinus node toward the auricles, a condition that ceases after several beats, when the P wave attains a normal outline. This explanation is corroborated by the constant length of the auricular periods and by animal experiments carried out by Condorelli, which revealed a cyclic change in the P wave in dogs after phenol alcohol had been applied to the region of the sinus node. As the cause of the disturbance in the patient the author assumes short, transitory inflammatory or vascular changes that interrupt the normal connection between sinus node and auricle and thus lead to a changed conduction of the stimulus. Observations on the disturbances of intra-auricular conduction are rare, owing to their rare occurrence and to the fact that sometimes they do not cause rhythmic disturbances and so escape observation. But they are of great importance in the estimation of the condition of the cardiac muscle, particularly if they concur with disturbances of atrioventricular conduction.

Acetonitrile Test in Cardiac Neurosis.—To determine whether the conditions designated as cardiac neurosis (palpitation, pain, pressure, anxiety and occasionally acceleration of the pulse without detectable anatomic changes of the heart) may not have some organic cause, Budelmann performed the Reid Hunt acetonitrile test and the glycogen test on twenty-five patients with cardiac neurosis. The outcome of the tests indicated that the blood of some of these patients contained an excess of thyroid hormone. The author emphasizes that these patients had no other symptoms of a thyrotoxic disturbance, but he considers it nevertheless probable that a mild form of thyrotoxicosis did exist. In patients in whom both tests for the presence of an excessive amount of thyroid hormone gave a negative reaction, a thyrotoxic origin of the cardiac neurosis

is not likely. In these cases either the psyche or disturbances of the extracardial nervous system of the heart are probably responsible for the cardiac disturbances. A cardiac neurosis that can be traced to thyrotoxicosis, however, should not be considered an organic heart disease, because it is probably due to the fact that the excessive amount of thyroid hormone causes changes in the nervous system, which in turn cause the cardiac manifestations.

Medizinische Klinik, Berlin

29: 831-864 (June 16) 1933

- Hypophyseal Diseases. W. Berblinger.—p. 831.
Development of Cornea. O. Grosser.—p. 837.
*Laurence-Biedl's Syndrome. A. Biedl.—p. 839.
*Apparent Malpractice of Physician. P. Dittrich.—p. 840.
*Difficulties of Diagnosis "Rupture of Tube." F. Heimann.—p. 842.
*Treatment of Addison's Disease by Means of Extract of Suprarenal Cortex. A. Sachs and G. Stritzko.—p. 845.
*Sensitive Method of Eliciting Patellar Reflex. E. Weidlinger.—p. 847.

Laurence-Biedl's Syndrome.—Biedl gives the histories of three patients with the Laurence-Biedl syndrome, two of whom were members of the same family. The symptoms are retinitis pigmentosa, mental deficiency, obesity, disturbances of the sexual development and, occasionally, congenital malformations (polydactylia, atresia ani and cranial deformities). The author differentiates this syndrome from familial amaurotic idiocy. The absence of obesity and the later development of cachexia, the rapidly progressing impairment of the visual capacity to complete blindness, the progressing dementia and the epileptic attacks indicate familial amaurotic idiocy. Although a complete explanation of the Laurence-Biedl syndrome is as yet impossible, the author considers it a heredodegenerative disorder consisting of a disturbance in the region of the mesencephalon, and of a chorioretinal disorder combined with other developmental abnormalities. It has nothing to do with a primary disturbance of the hypophysis. Whether the simultaneous occurrence of disturbances in the mesencephalon, in the retinal region and perhaps in other regions of the cerebrum is the result of the common derivation of these regions from the primary anterior cerebral vesicle can so far only be assumed.

Diagnosis of Ruptured Tubal Pregnancy.—Heimann illustrates with four case reports the difficulties in the diagnosis of ruptured tubal pregnancy. The first report concerns a woman in whom a ruptured tubal pregnancy of the left tube was followed by the same condition in the right tube several years later. The author discusses the advisability of the removal of the second tube in the course of the first surgical intervention. He thinks that if the second tube is normal it is advisable to leave it intact, particularly if, as in the reported case, there is a desire for more children. He asserts that the probability of an intra-uterine pregnancy is from five to six times greater than that of a repeated extra-uterine pregnancy. In the second case, the rupture of the tubal pregnancy concurred with a torsion of the pedicle, and the symptoms of the latter predominated. Probably the torsion led to rupture, for the surgical specimen shows an enormous swelling not only of the tube but also of the ovary. The enlargement of the tube corresponds to a pregnancy of the third or fourth month, while the pregnancy could, at the most, be in the sixth week. The history of the menstruation was so unclear that an extra-uterine pregnancy was at first not thought of, but it was corroborated by microscopic examination. The two other cases are noteworthy because the symptoms indicated an extra-uterine pregnancy, while the operation revealed this diagnosis to be incorrect. One patient had myomas of the uterus, an adherent ovarian cyst on the right side and a dermoid of the left tube. The author thinks that the severe attacks of pain and the weakening of the pulse may have been caused by a beginning torsion of the tumors, for he observed another patient with torsion in whom these symptoms predominated. In the other patient it was again the torsion of a cyst of the right ovary that caused the symptoms of a ruptured tubal pregnancy.

Method for Eliciting Patellar Reflex.—For the production of the patellar reflex, Weidlinger has the patient sit down so that trunk and thigh and thigh and leg form obtuse angles (more than 90 degrees). In this position, the patient places the sole of his foot on a roller on the floor and lifts the heel to such an extent that the sole is about parallel with the floor. A stroke on the tendon of the quadriceps has the effect of

jerking the foot forward on the roller, if the reflex is present. With this method the patellar reflex can be elicited even in cases in which it could be done only by means of the Jendrassik maneuver. The method makes it impossible for the patient to suppress the reflex.

Monatsschrift für Kinderheilkunde, Berlin

58: 89-168 (June 14) 1933

- Later Fate of Children with Intracranial Obstetric Hemorrhages. W. Catel.—p. 89.
Experiences with Roentgen Treatment in Nonspecific Inflammatory Processes. Leonore Liebenam and H. Schönfeld.—p. 104.
Classification of Nutritional Disturbances. H. Mommsen.—p. 121.
Roentgenologic Demonstrability of Suprarenal Tuberculosis in Addison's Disease. C. Hünermann.—p. 124.
*Dietary Treatment of Dysentery. Liselotte Lennhoff.—p. 130.
Occurrence of d'Herelle's Bacteriophage on Colon and Paracolon Bacilli in Feces of Nurslings With or Without Intestinal Disturbances. E. Deák.—p. 143.
*Pathology of Nursling Toxicosis: Acid-Base Equilibrium in Enteral Toxicosis. J. Csapó and E. Kerpel-Fronius.—p. 147.
*Treatment of Anemia in Nurslings and Small Children with a Sulphur-Containing Organic Compound. A. Frank.—p. 157.

Dietary Treatment of Dysentery.—Of the 405 children having dysentery, observed by Lennhoff in the last six years, 107 were treated with citric acid milk, 94 with lactic acid milk and 184 with Moro's apple diet, and 20 nurslings were fed with breast milk and buttermilk. A comparison of the results obtained with the two types of acid milk reveals no essential differences. The technic of the Moro apple diet (abstracted in THE JOURNAL, March 1, 1930, p. 673) was modified by the author in that the unpeeled, grated apples were given as the only food for two days, after a preliminary administration of tea for from twelve to twenty-four hours. Then lactic acid milk was fed to the children, and not until after this was the protein diet introduced. In comparing the therapeutic results of the acid milks and the apple diet, it was found that the improvement of the general condition, the reduction of fever, and the disappearance of the vomiting and of the tenesmus is about the same with the two methods. A difference is noticeable only in the stools, which lose the admixture of blood and mucus and attain their normal consistency sooner after the apple diet than after the other treatments. The apple diet is not suitable for nurslings of less than 8 months.

Acid-Base Equilibrium in Enteral Toxicosis.—Csapó and Kerpel-Fronius investigated the acidosis of the enteral toxicosis of nurslings. The acidosis cannot be explained by a loss in bases alone, for the reduction in the acid chlorine ion keeps step with the loss in bases. The acidosis of enteral toxicosis is not a chloride acidosis or one that is caused by a loss of bicarbonates, but it is always an organic acidosis. The accumulation of the organic acids is primarily the result of the disrupted, poisoned intermediate metabolism. Organic acidosis is the characteristic symptom that diabetic, uremic and infectious toxic comas have in common.

Treatment of Anemia by Sulphur-Containing Compound.—An organic compound of carbon disulphide with casein, when employed together with reduced iron, was found by Frank to be valuable in the treatment of nurslings and children with secondary anemia. The erythrocyte and hemoglobin values and the color index increased in a comparatively short time. The white blood picture was not changed.

Münchener medizinische Wochenschrift, Munich

80: 915-954 (June 16) 1933

- My Technic of Gastric Resection. H. von Haberer.—p. 915.
*Diphtheria of Glans Penis, of Scalp and of Pharynx in Three Children of One Family. P. Dahr.—p. 921.
Significance and Technic of Examination of Eye by Practitioner. E. Engelking.—p. 923.
Arrest of Hemorrhages from Nose and Throat. Güttich.—p. 924.
When Is Roentgenoscopy Advisable? R. Grashey.—p. 926.
Patient, Disease and Practitioner. F. Moritz.—p. 928.
*Experiences with Ventriculography and Encephalography in Diagnosis of Tumors. R. Wanke.—p. 931.
Influence of Changes in Atmospheric Pressure on Human Beings. G. Schaltenbrand.—p. 934.
Microphotography with Simple Aids. K. Ebert.—p. 936.
New Trends in Studies of Capillary Vessels on Living Object. G. Salvioli.—p. 937.

Diphtheria of Glans, Scalp and Pharynx.—Dahr gives the histories of three children of one family who contracted diphtheria with different localizations. First a boy, aged 5,

developed balanitis of diphtheric etiology. Diphtheria bacilli were likewise present in the clinically healthy pharynx. A short while later the brother of this patient, aged 1, developed diphtheria of the scalp and, shortly after, a sister of the two boys developed pharyngeal diphtheria. All the diphtheria strains obtained from these children showed the same behavior, culturally, microscopically and particularly in regard to their virulence.

Encephalography in Diagnosis of Cerebral Tumors.—Wanke shows that the introduction of ventriculography and encephalography has increased the incidence of correct pre-operative diagnoses of cerebral tumors. From 1920 to 1927, that is, before the application of these diagnostic methods, 41 per cent of the cases remained unexplained as to diagnosis and localization of the tumor, whereas from 1928 to 1932 only 22 per cent remained unexplained. These figures apply only to the intracerebral and the dural tumors, as the hypophyseal and acoustic tumors can be readily diagnosed. During the earlier period the number of operations performed with an indefinite diagnosis amounted to 27 per cent, while in the second period they amounted to only 9 per cent. The author admits that this improvement in diagnosis cannot all be ascribed to encephalography and ventriculography and that it is partly the result of a more exact neurologic examination and of cerebral puncture. However, a careful analysis of the material indicates that the improvements in diagnosis are noticeable particularly in tumors of the brain stem, the cerebellum and the fourth ventricle, which doubtless demonstrates the diagnostic value of ventriculography and encephalography. The author stresses the fact that, in spite of the improved diagnosis, the number of tumors found and treated in the course of the operation has remained the same, the percentage being from 31 to 33 during both periods. He questions whether an improvement of operative results can be expected from the diagnosis alone, because it frequently happens that a tumor demonstrated and localized by neurologic examination, ventriculography and cerebral puncture is vainly searched for during the operation. He points out that in this respect his conclusions largely corroborate those reached by Cushing, who stresses that the advance in the treatment of cerebral tumors is not merely the result of diagnostic methods but is rather due to a generally improved surgical technic.

Wiener klinische Wochenschrift, Vienna

46:737-768 (June 16) 1933

- Development of Hygiene as Study Subject. H. Reichel.—p. 738.
Origin and Significance of Cardiac Murmurs. S. Bondi.—p. 741.
*Investigations on New Methods for Testing Olfactory and Gustatory Sense. K. T. Dussik and O. Kauders.—p. 745.
*Symptomatic Thrombopenic Purpura Following Use of Quinine and Saffron as Abortifacients. P. Fasal and G. Wachner.—p. 747.
Antagonism Between Symptoms of Acromegaly and Those of Acromeria (Sclerodactylia and Acrosclerosis). T. Bárony.—p. 750.
Local Anesthesia by General Practitioner. R. Demel.—p. 751.
Forms of Vertigo and Its Diagnosis. R. Leidler.—p. 756.

Testing Olfactory and Gustatory Senses.—The fact that in traumas of the cranium and of the brain there is frequently an impairment of the olfactory and gustatory senses, and that the known test methods for smell and taste are still deficient, induced Dussik and Kauders to find more reliable test methods. They based their efforts on the observation that the intravenous injection of certain medicaments elicits in many patients more or less pronounced olfactory sensations. This is known particularly of neoarsphenamine. In this case, however, the olfactory and gustatory perceptions are usually not distinct from each other, but the sensation is more of the character of a gustatory smelling and the sensations are not uniform. The authors reason that the following requirements should be fulfilled by an injection fluid to be considered reliable for such tests: 1. It should be entirely harmless in the quantity to be injected. 2. It should produce olfactory and gustatory sensations in all normal persons. 3. The olfactory and gustatory sensations should have a certain intensity and they should not develop simultaneously but successively. 4. The developing sensations must be known to the person. Such a substance is a water-soluble camphor preparation, which was injected in quantities of from 0.6 to 1 cc. Observations were made in 200 normal and pathologic cases. The latter included patients with tumors or other focal diseases of the central olfactory and

gustatory regions and also patients with cerebral trauma. The authors also tried several other substances, such as sodium dehydrochlorate, menthol and salts of quinine. They found the quinine preparations particularly suitable for testing the gustatory sense. In summing up the advantages of their methods they stress the following points: 1. The intravenous test permits an exact dosage and a gradation of the sensory stimulus. 2. The test is independent of the condition in which the mucous membrane is at the time. 3. It permits the detection of differences in the capacity of olfactory perception on the two sides, and the stimulus is sufficiently intense to make perception possible even if the receptive capacity is considerably impaired. 4. For the purpose of neurologic diagnosis there are several factors (duration of sensory stimulation, hypersusceptibility and hallucinatory after-sensations) that not only concern quantitative differences but also give a better insight into the functional condition of the sensory sphere. The authors hope that by trying still other substances, by which olfactory and gustatory sensations can be elicited by way of the blood stream, a method may be found that is particularly suitable for neurologic diagnosis.

Purpura Following Use of Quinine and Saffron as Abortifacients.—Fasal and Wachner present the clinical history of a woman, aged 21, who, during the third month of pregnancy, tried to produce an abortion by taking four quinine powders and a tea made from saffron (*Crocus sativus*). On the following day she felt ill, vomited and had a hemoptysis. Later she had slight attacks of coughing and an increase in temperature and, on the fourth day, hemorrhagic blotches developed over the entire body and particularly on the mucous membrane of the tongue, lips and gums. She had hematuria. The lungs presented hemorrhagic foci, and the blood count revealed a considerable thrombopenia. The treatment consisted of intravenous injections of calcium and subcutaneous injections of a hemostatic preparation. The blood status and the general condition gradually improved. The author admits that gestation as such may cause a hemorrhagic diathesis, but the fact that the thrombopenic purpura developed after the ingestion of the abortifacients and later subsided, in spite of the continuation of the gestation, indicates that the quinine or saffron, or a hypersusceptibility to these substances, caused the purpura. He adheres to this assumption in spite of the fact that cutaneous tests with and the ingestion of small amounts of quinine and saffron remained without reaction, and he cites other reports from the literature in which the use of saffron and quinine was followed by similar complications.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

105:357-512 (June 16) 1933

- Potassium-Calcium Content of Blood Serum in Late Stages of Pregnancy. E. Krug.—p. 357.
*Giant Growth of Fetus. W. Pape.—p. 370.
Old and New Ideas on Releasing of Arm in Natural and Artificial Pelvic Presentation. A. Lehmacher.—p. 385.
Poisoning with Soft Soap in Attempted Abortion and in Animal Experiment. G. Haselhorst and G. Schaltenbrand.—p. 398.
Genesis and Nomenclature of Annular Placenta. F. B. Rüder.—p. 437.
Lipoma of Uterus; Case. A. Muschik.—p. 444.
*Gestation and Acute Appendicitis. G. Fätyöl.—p. 449.

Giant Growth of Fetus.—In studying the records of 4,165 deliveries in the women's clinic of Osnabrück, Pape found that 558, or 13.39 per cent of the infants, were abnormally large. A comparison of this percentage with those of other clinics indicates that this is unusually high. In discussing the causes of the giant growth of fetuses, the author says it is generally believed that tall and strong parents produce large children, and he found that this applies in general to the material studied by him. This is not always the case. Short and even weak parents may have abnormally large children. It has also been observed that there are women who habitually produce large fetuses. Heredity likewise seems to play a part, for it is frequently found that the mother of a large fetus has herself been large at birth. Causes mentioned by other investigators for the giant growth of fetuses are: large size of germ plasma, excessive intra-uterine food supply (for instance, in women with diabetes mellitus), hyperactivity of the fetal hypophysis, early menarche of the mother, seasonal influences and the diet of the mother. The author doubts whether the diet of the mother influences the size of the fetus. That the age of the mother

and also the number of preceding births influence the size of the fetus has been shown by several investigators and could be corroborated by the author's material. The size of the fetus increases with the age of the mother and also with the number of preceding births. The duration of gestation seems to have a great influence on the size of the fetus, in that the pregnancy is generally prolonged in the case of large infants. Disturbances that can be traced to the large size of the fetus are noticeable during the placental period and during the puerperium. The delivery of the placenta is frequently disturbed. In 149 out of the 558 cases, Credé's expression had to be employed and, in about thirty cases, this maneuver had to be done under anesthesia. The incidence of atonic postpartal hemorrhages is also surprisingly large. The uterus, which because of the large size of the fetus has been greatly dilated and is greatly fatigued from the strain of difficult labor, frequently shows a deficient involution, and in many cases of subinvolution the discharge of the lochia is disturbed. The difficult labor and the increased morbidity explain the higher maternal and fetal mortality rates. The author thinks that if there are signs indicating an abnormally large fetus the delivery should be done in an institution.

Gestation and Acute Appendicitis.—The recognition of appendicitis during gestation is comparatively difficult, because its symptoms are readily mistaken for the molimina of pregnancy and it is understandable that only severe cases are observed. This fact induced Fátýol to describe the seven cases that came under his observation. After giving the case histories, he discusses their diagnostic difficulties and particularly their differentiation from inflammations of the uterine adnexa, torsion of the pedicle of cystic tumors, extra-uterine pregnancy, pyelitis gravidarum and cholelithiasis. The unfavorable prognosis of appendicitis during pregnancy is due to the fact that perforation is more likely. The treatment should be less conservative than is the case if there is no pregnancy; that is, surgical treatment should be resorted to even if the symptoms are not severe. This applies particularly to the second half of pregnancy, whereas during the first few months the rules of surgery should be followed. The prospects of preserving the gestation are better when surgery is resorted to within the first forty-eight hours after the attack. Early recognition of the appendicitis is of vital importance for mother and fetus.

Sovetskaya Klinika, Moscow

19: 1-131, 1933. Partial Index

Mitogenetic Rays of Gurvich in Internal Medicine. D. E. Voykhanskiy.—p. 3.

Rôle of Correlation of Salyrgan and Solution of Pituitary in Water and Chloride Exchange in the Treatment of Edemas. P. I. Mayzlish.—p. 15.

Blood Transfusion in Septic Processes. V. V. Lebedenko, I. M. Grigorovskiy and M. G. Mikhaltsov.—p. 26.

Electrocardiographic Observations in Resuscitation of Heart with Epinephrine. S. Yu. Glezer.—p. 39.

*Prevention of Heart Syncope During Operation by Means of Quinine Preparations. B. A. Egorov and Z. D. Savelyeva.—p. 60.

Motor Disturbances of Stomach As Cause of Temporary Disability: Simple Methods of Their Recognition in Ambulatory Practice. Ya. I. Daikhovskiy, V. D. Koribskiy, M. A. Lyass, B. E. Votchak and P. T. Averbakh.—p. 71.

Prevention of Heart Syncope During Operation.—Egorov and Savelyeva state that sudden arrest of the heart and the ensuing death in the course of an operation, particularly under chloroform or ether anesthesia, result most frequently not from paralysis of the heart but from acutely developing motor irritation of the cardiac muscle; that is, from ventricular fibrillation. Its prevention calls not for stimulating but rather for paralyzing drugs; hence the rationale of quinine preparations. Quinine or quinidine in doses of 0.1 Gm. twice daily diminish the predisposition to fibrillation by lowering the irritability of the neuromuscular elements of the heart. Because they possess no means of recognizing in advance the predisposition to fibrillation, the authors recommend quininization of the heart in all preoperative patients. They applied it in 100 patients admitted to the gynecologic clinic for operation. There are two contraindications to the use of quinine: (1) idiosyncrasy to the drug and (2) causation of uterine bleeding in obstetric and gynecologic states. The simultaneous use of cardiac stimulants is not contraindicated by the use of quinine. On the contrary, the effect of the use of both groups of drugs

is to coordinate the complicated pathologic disturbance. There was not a death in their series, which contained patients with hypertension, valvular disease, decompensations and arrhythmias. The authors consider the number of patients in their series too small for statistical deductions but are favorably impressed by the results.

Hospitalstidende, Copenhagen

76: 577-604 (May 25) 1933

Sexual Functions of Pituitary Body and Their Significance: Review. E. Jarløv.—p. 577.

*Obstructing Tumors as Hindrance in Delivery. A. Olsen.—p. 588.

Determination of Hemoglobin After Sedimentation Reaction. H. Lebel and M. C. Lottstrup.—p. 597.

Obstructing Tumors as Hindrance in Delivery.—Olsen has observed three cases during the last four years; namely, one of cervical fibroma, one of neurogangliefibroma on the anterior sacrum and one of mollusum fibrosum in the pelvic connective tissue. While these cases differ greatly, they are of similar diagnostic significance, and the possibility of such obstructions must be considered. Treatment consists in cesarean section at the beginning of delivery and thus requires diagnosis during pregnancy. In two of his cases the tumor was an accidental observation. In the majority of cases of obstructing tumor, timely recognition depends on exploration as a part of the systematic examination from the thirty-fourth to the thirty-sixth week of pregnancy.

76: 605-632 (June 1) 1933

Introduction of Electrotherapy in Denmark. G. Norrie.—p. 605.

*Treatment of Sterility and Habitual Abortion with Wheat Germ and Oil of Wheat Germ (Vitamin E). P. Vogt-Møller.—p. 621.

Hydatid Mole with Cystic Degeneration of Ovaries: Case. K. Antons.—p. 626.

Treatment of Sterility with Wheat Germ.—Vogt-Møller reports twenty-five cases in which this treatment was used. The results seem favorable, especially in habitual abortion, in which a living child was born in seventeen out of twenty cases treated.

Ugeskrift for Læger, Copenhagen

95: 687-708 (June 15) 1933

*Blood Sedimentation Reaction as Controlling Examination in Patients with Acute Febrile Diseases. H. Heckscher.—p. 687.

Wrapping of Sterile Bandages, Particularly "Bayonet Wrapping." H. Wulff.—p. 690.

On Man's Need of Protein. B. Susskind.—p. 692.

Sedimentation Reaction in Febrile Diseases.—Heckscher examined the blood sedimentation reaction in about 700 patients with catarrhal fever and various complications. The rise, climax and fall of the sedimentation values appeared some days later than the movement of the fever curve, and in 95 per cent of the cases values normal or nearly so were established in the course of two weeks after the end of the fever.

95: 709-736 (June 22) 1933

Lesions of Meniscus. H. Abrahamson.—p. 709.

*Undulant Fever. L. C. Stage.—p. 713.

*Xanthomatosis. G. A. Hagerup.—p. 718.

Nomenclature of Barbituric Acid Preparations. H. C. Gram.—p. 720.

Undulant Fever (Bang).—Better results were obtained with typhoid vaccine than with Malta fever serum in thirty-five cases of undulant fever treated by Stage since July, 1927. He states that the fever with its characteristic course and long duration are common to all cases. The fever may be the only symptom, but there may also be headache, alone or with myalgias and neuralgias, catarrhal symptoms, abdominal symptoms, pain and tenderness in the joints, or varying combinations of these symptoms. After-examination shows that the Widal reaction is usually negative one year after recovery, but in one of the reported cases there was still a relatively marked agglutination reaction after two and one-half years.

Xanthomatosis.—Hagerup reports a case of xanthomatosis localized in the bone system in a girl, aged 2½. Diagnosis has been verified by microscopic examination. Christian's syndrome is absent. There are polycythemia and a moderately grave anemia. He says that the disorder varies greatly in the early stages and roentgen examination affords the best help in diagnosis. In his opinion, xanthomatosis is more common than is indicated by the twenty-seven case reports in the literature and therefore calls for attention.

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OPHTHALMOLOGY AS A CAREER

CHAIRMAN'S ADDRESS

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BOSTON

The only hazardous duty connected with the chairmanship of this section is that of making an address. If in attempting to fulfil this obligation I add to the satisfaction with which the veterans among us look back on their careers, if in some measure I inspire the younger ophthalmologists to continue their good work with increased enthusiasm and if I persuade some hesitating embryo ophthalmologist to emerge, I shall feel that I have not entirely failed in my task.

What were the chief motives that originally induced us to take up the practice of ophthalmology? Some of us have been influenced chiefly by the fact that it permits an easier life than general practice, especially in its relative freedom from night duty. Some have been influenced mainly by a dearth of competent ophthalmologists in our communities, others by the high example set by ophthalmologists with whom we were acquainted. A few have studied medicine and ophthalmology as a result of interest aroused by experience as opticians, and a few, no doubt, have been influenced by the mistaken idea that ophthalmology is a sure road to wealth. Still others have followed in the footsteps of their fathers, and judging by their success it would seem that an excellent way to become a great ophthalmologist is to select an eminent ophthalmologist for a father. In my own case, at about the age of 12 years I came to the decision to become an ophthalmologist and have ever since adhered to it. It was brought about by the interest in optics aroused in me by a photographic camera presented by my parents.

After our initiation into ophthalmology we soon learned that there are many considerations of far greater importance to influence us, and it has been these that have kept us steadfast in our careers. Of these the relief of blindness, or impending blindness, is probably the most impelling. It seems to me there can be no greater satisfaction in life than that which comes to the ophthalmic surgeon when he restores the sight of a blind man by a well executed operation for cataract. To be sure, as I have remarked elsewhere, this satisfaction is somewhat dimmed when, as occasionally happens, the patient gives the entire credit to God.

To many, one of the most attractive features of ophthalmology lies in its far-reaching relationship to many other sciences. To attain perfection in ophthalmology would require intimate knowledge of all other

branches of medicine and also of mathematics, physics, chemistry and biology—something impossible of attainment by any single person. However, knowledge as complete as possible in any one of these subjects adds tremendously to the understanding and interest of the ophthalmologist. To exemplify the wide ramifications of this science let us consider, for instance, the histology of the eye. The eye and its adnexa contain representatives or analogs of almost all the tissues of the body other than the viscera. In the retina, for instance, the brain is represented, and to bring out its structure one must utilize the staining methods employed in the study of the brain. The exquisite rods and cones, the analogs of the ependymal cells, inspire one to investigate their structure and to try to ascertain by experimental methods how they are able to generate visual impulses as a response to light, a problem still unsolved.

To those imbued with the spirit of investigation ophthalmology offers many attractions. A well equipped laboratory is not essential. Important discoveries may be made by correctly interpreting the experiments made by nature in clinical cases. Operative work may legitimately be made a rich field for experimentation, if the surgeon will resolve never to perform on a patient any operation to which he would not himself submit under the existing circumstances. Although, usually not at once obvious, the discovery of a single new fact, an improvement in operative technic, the devising of a new instrument and an improved method of treatment are each far more important than the results obtained in individual cases in routine work. For contributions to science benefit not only the present but future generations all over the world. To those who desire to devote themselves exclusively to research, ophthalmology, through endowed institutions, is now offering greater opportunities than at any time in the past, and these no doubt will steadily increase. As regards problems for investigation, they are innumerable, for as in the case of any other division of medical science there is no subject the knowledge of which does not need to be extended, and there are many subjects about which almost nothing is known.

Ophthalmic surgery to most ophthalmologists is the most fascinating part of their work, not only because it so often yields prompt and brilliant results, but because it requires the exercise of great skill and discriminating judgment. The manipulations are more delicate than those of the general surgeon and decidedly different from those of the otolaryngologic surgeon. It has been my observation that an operator can seldom be equally skilful in both ophthalmic and otolaryngologic surgery. Lack of natural dexterity is a handicap to the ophthalmic surgeon that is difficult to overcome. Ophthalmic surgery like all other forms of surgery has its dark side, namely, its catastrophes.

Some of these are unavoidable, others are due to mistakes which we later sadly realize we could have avoided. Fortunately they are infrequent, but they tend to keep us humble. The general surgeon has an advantage in this connection over the ophthalmic surgeon in that a dead man tells no tales, whereas a blind man usually not only has the power of speech but walks the streets as a horrible example.

A fundamental knowledge of pathologic anatomy is essential for the most efficient work in all branches of medical science, and the specialist should have in addition an intimate knowledge of pathologic problems relating particularly to his work. The internist and the general surgeon are seldom able to continue actively the study of pathology because of the time-consuming and tedious nature of their work. It should be possible, however, for every ophthalmologist to continue the study of ocular pathology throughout his career. To me, the point of view of pathologic histology has been extremely helpful in clinical work. I have in all cases attempted to visualize conditions of disease as I have seen them under the microscope. I am aware that there are many able ophthalmologists who are utterly lacking in first-hand knowledge of pathologic anatomy, but I feel sure that such knowledge would have added to their efficiency. Our beloved Fuchs was an illustrious example of those who have correlated clinical and histopathologic observations, and his disciples in this country are doing him great credit.

A knowledge of psychology is useful to the ophthalmologist in many ways, for instance in the determination of refractive errors, in operative work and in making explanations to patients. Since the average patient has not the slightest conception of optics or of the structure of the eye, it is a difficult matter to fit any explanation of his ocular condition to his point of view. There are ophthalmologists, however, whose ability is so great in this respect that they excite the envy of their colleagues. The term "strain" applied to the eye as a whole or to any of its parts is a great asset to us. To the patient it has a definite and satisfying meaning, but to the doctor who employs it, it is almost if not quite meaningless, so that by its use he does not really commit himself in any way.

The ophthalmologist has many great men to revere and emulate, who have established the foundations of his science. Notable among them are Young, Helmholtz, von Graefe, Donders, Arlt, Snellen, Bowman, Fuchs, Haab, Axenfeld and Gullstrand. He has three national societies and usually a local ophthalmologic society, memberships in which give him a spirit of comradeship with his colleagues and add zest to his life work. The national societies differ in character. The American Ophthalmological Society may be regarded as the aristocrat, for it seeks to limit its membership to outstanding men with the highest ethical standards. It has the distinction of being in this country the oldest medical society devoted to a specialty. The American Academy of Ophthalmology and Otolaryngology was primarily organized to serve those who combine the practices of ophthalmology and otolaryngology. It has instituted many innovations in the conduct of its meetings which have been highly appreciated by its members. Through its initiative was established the department of ophthalmic pathology at the Army Medical Museum. This, to some extent, has reduced the appalling waste of valuable pathologic material in this country. The Section on Ophthalmology of the American Medical

Association is the democratic ophthalmologic society of the country, for its only requirement for membership is membership in the parent society. Its transactions contain some of the best papers relating to the eye. They also, as would be expected, contain some of the worst. The three national ophthalmologic societies are in no sense antagonistic, but on the contrary, are highly cooperative. Through their cooperation was established the American Board for Ophthalmic Examinations, the first institution of its kind.

There are a few features of ophthalmologic practice that at the present time are relatively unsatisfactory. One of these is the unduly high proportion of cases in which the only requirement is the correction of refractive errors. Many of the younger ophthalmologists have so few cases of ocular disease in private practice that they are unable to acquire adequate experience in diagnosis and treatment and are unable to perfect themselves in operative work. Those who are fortunate enough to be connected with a large ophthalmic hospital are less at a disadvantage in these respects. Refraction is, of course, an important branch of ophthalmology, presents interesting problems and still offers opportunity to those with ingenuity to devise new methods and instruments. Every patient is entitled to have the optical system of each eye corrected, if possible so as to make it equal or superior in resolving power to that of the retina and brain. But in my opinion the importance of errors of refraction has been and still is greatly exaggerated. It was natural that toward the end of the previous century, soon after their importance had begun to be realized, the pendulum should swing too far. I can recall at least one eminent ophthalmologist in this country who maintained that errors of refraction could even cause choroiditis. In time the ophthalmologists so thoroughly impressed the public with their enthusiasm that now there are few who do not believe that incorrect glasses are a menace to the integrity of the eyes. Needless to say, the optical trade has not been slow to take advantage of this situation.

The advent of the optometrists has lightened the burden of the ophthalmologists, but has raised a problem so far as the public is concerned. For no one with ordinary common sense would desire to place himself in the hands of an optometrist if he was aware that the latter was not qualified to make a complete examination of the eye. It is human nature not to admit ignorance, and for this reason, many optometrists lead their "patients" to believe that there is little concerning the eye that they do not know. Their use of the title "doctor" adds to the deception. The more intelligent of the optometrists naturally enough aspire to learn something about ocular disease and sometimes acquire sufficient knowledge of the subject to exemplify the old adage "A little knowledge is a dangerous thing." If the optometrists as a group continue in such aspirations there will soon be in their stead half-baked or more likely quarter-baked ophthalmologists. This will certainly not solve the problem. It cannot be fully solved by attempting to increase the number of competent ophthalmologists because, as already indicated, the latter cannot remain competent if they have too large a proportion of patients who simply require glasses. Perhaps it could be solved if it were possible for ophthalmologists and optometrists to cooperate, but under present conditions this seems to be impossible.

It seems to me an open question whether or not the licensing of physicians is in the best interests of the

public. Possibly if the practice of medicine were unrestricted and patients had to rely on their own judgment as to the selection of those best qualified to care for their ills, they would become educated to make better selections than they do now. Certainly from among homeopaths, osteopaths, chiropractors, etc., and even from among the regular medical professions, the law does not make it impossible for the public to select a multitude of quacks. However this may be, licensing boards are apparently here to stay, and this being the case, logically they should require additional qualifications for specialists. In ophthalmology the need of further requirements is particularly obvious. At present any licensed physician may treat diseases of the eye and even proclaim himself an eye specialist, however inadequate his training in ophthalmology may have been. Most of us here have seen many cases in which actual loss of sight has resulted from improper treatment by physicians untrained in ophthalmology. The remedy for this condition would seem to be already at hand in the American Board for Ophthalmic Examinations, but thus far it has not been utilized by licensing boards.

To attain success in ophthalmology what is the best path to follow? It is impossible to answer this question categorically. For success does not have the same meaning for every one, and whatever this meaning may be there are many paths to it, no one of which is equally suitable for all travelers or ever reaches the ultimate goal, perfection. In this country, however, the tendency seems to be to direct all would-be ophthalmologists along the same path. After completing the usual courses in college and medical school, the student is to take an internship in a general hospital and then in a special hospital. This yields products of good average quality but not sufficiently often of the highest quality. It seems to me that radical departures from this standardized method of making an ophthalmologist should be permissible. These could begin even in preparatory school, where for instance, Latin and Greek might oftentimes be sacrificed for French and German. In college the major studies should be mathematics, physics, chemistry and biology, with especial emphasis on any one of these in which the student shows unusual aptitude. In medical school, he should interest himself particularly in those subdivisions that are most closely related to the eye: for instance, in anatomy and histology, the head and nervous system; in physiology, vision.

After medical school, in my opinion, an internship in a general hospital is not desirable, for while in such a service, especially if it is of the rotating variety, much can be learned of value to an ophthalmologist, this is acquired at an expenditure of time and energy that could be more profitably employed in other ways. Moreover, the drudgery of the routine work leaves too little time for original thinking just at the time of life when this should be cultivated. It seems to me that a better plan is for the study of ophthalmology to begin immediately after completion of the general medical course and for this to be combined with further study of various medical subjects. Thus the student could attend eye clinics two or three times weekly in an ophthalmic hospital, mornings or afternoons, as the case might be, and spend much of his remaining time in the outpatient clinics of a general hospital. In the latter he would gain familiarity with conditions of general disease under circumstances that he would be most apt to encounter in his future ophthalmologic work.

According to his inclinations the student could emphasize the study of certain branches, such as neurology or dermatology. An excellent alternative to the foregoing plan is for the student to obtain a part-time teaching position in pathology, bacteriology or physiology. This would give him a knowledge of the fundamentals of medical science that he could obtain in no other way, and permit him during the same period also to pursue the study of ophthalmology to some extent. During this time he could also study ophthalmic pathology or physiologic optics.

After occupying himself in this way for at least six months the student reaches the stage where he must for a time concentrate his energies almost exclusively on the study of clinical ophthalmology. Under present conditions it is best for him now to obtain if possible an internship in an ophthalmic hospital. A large hospital should be selected in which the members of the staff give instruction to the interns. If the student fails to obtain such an internship, a good plan is for him to take a postgraduate course in ophthalmology in some medical school and then become a volunteer assistant in the clinic of an ophthalmic hospital. It has been my observation that it is possible for a man with little preliminary training to become an excellent ophthalmologist, even after he has attained the age of 40, by following the work of a large ophthalmic hospital for a year or more, especially if he attaches himself to one of the leading members of the staff. This amounts to the old apprentice system, and proves that the latter is still not without merit. If the student can afford the time and expense, it is advantageous for him to spend several months abroad before beginning private practice, visiting the important eye clinics and taking courses in one or more of them.

The student is now a full-fledged ophthalmologist, ready to begin practice, if he so desires. For those few to whom that makes no appeal, I can imagine no more satisfactory life than that devoted to clinical and research work in some large ophthalmic hospital. For such, a few full-time salaried positions have been established. Generally speaking, I do not believe that full-time positions are in the best interests either of the incumbents or of the public at large, for they place the former entirely at the mercy of boards of trustees and deprive patients not eligible for charity of the services of some of the best trained ophthalmologists. In the interests of ophthalmic research also it seems to me preferable to have a large number of part-time rather than a small number of full-time workers. However, no fixed rule should be adopted in regard to this matter. Positions should be fitted to the available men.

As to the best way to acquire a private practice I have made little study, and therefore do not feel qualified to express an opinion. I have observed, however, the ruin of the scientific careers of several young ophthalmologists by the early attainment of lucrative practices. I have also observed that in the effort to acquire private practice the young ophthalmologist is apt to dissipate his energies by connecting himself with too many hospitals. A clinical position in one first-class ophthalmic hospital, a consulting position in a general hospital and perhaps a teaching position in a medical school should be sufficient, and will allow him time to read, think and investigate. As regards pecuniary rewards, ophthalmology offers ample opportunities. These are, however, less than those of otolaryngology and far less than those of general surgery. As already

intimated, those whose chief ambition is to acquire great wealth should not enter the field of ophthalmology.

To those on the threshold of ophthalmology, especially if they have inferiority complexes, what I have said regarding the education of an ophthalmologist may seem discouraging. To such I would point out that the chief qualifications that make for a successful career in this specialty are common sense, industry, some degree of manual dexterity and a thorough foundation in the basic facts of this science. With these, efficient service can be given to the public. Without these, the candidate should knock at some other door. With a knowledge of basic facts, acquaintance with unusual conditions is not essential. By basic facts I mean, for instance, those related to glaucoma, iritis, cataract, ocular tuberculosis, ocular syphilis, *ulcus serpens* and errors of refraction. Acquaintance with unusual conditions is not essential because they occur so rarely that ignorance in regard to them is of relatively slight consequence to the public. Moreover, as a rule so little is known regarding their treatment that common sense alone is the best guide. Those who have a considerable degree of familiarity with rare cases are apt to regard all cases as unusual. Here again common sense is a great help. The safest plan is to regard no case as unusual until it is without question proved to be so. Of course, all cases are unusual in the sense that no two cases are exactly alike, but the similarity of cases of the same general nature is far more remarkable than their dissimilarity. Before making a diagnosis, however, it is always well to bear in mind the old saying, "All is not gold that glitters."

If any sort of life is worth living one devoted to ophthalmology surely is. It seems to me the greatest tribute any one can pay to his profession is to say that if he had his life to live over, his choice of a life work would remain unchanged. This tribute I pay to ophthalmology.

THE MAKING OF A PRACTITIONER

THE SEVENTH ALPHA OMEGA ALPHA ANNUAL
LECTURE

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Dean, McGill University Faculty of Medicine
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This is a society of honors undergraduates. It originated from a desire to cultivate the ideals of medicine in practice and research, to foster those qualities in the younger aspirants which enable them, as your motto states, "To become worthy to serve the suffering." It is this motto which tempts me to take advantage of my opportunity and discuss as my theme some of the vexing problems in medical education which aim at this joint ideal.

We live in the environment of a machine age. We are, I fear, slaves to systems of efficiency—to methods of medical training which impel us to turn out doctors by mass production. The student is nursed along, he is instructed, he is spoon fed to such an extent that he acquires the habit of mind which is apt to throw the responsibility for his education on the teacher.

Ready-made knowledge is like ready-made shoes or a second-hand coat, neither becoming to the wearer nor expressing the individuality of its possessor.

In other words, we on this continent suffer from what my friend Professor Fred Clarke designates "externalism." For everything we do in life we call on "George." The patient, for example, who, through his own indiscretions in work or play has made a mess of his life, consults the doctor, who must now assume the responsibility of setting him right—the invalid expecting the magician to effect a cure. So also countries institute laws of prohibition, expecting the government to assume the control of their morals, forgetting the while that morality comes from within. No! We cannot wire a twilight world for incandescent goodness.

Some features of medical education on this continent are not dissimilar. Even long before he enters the medical school the student is under control of the machine—the system—the gadgeteer, if you will, who, sitting at the switch, determines how in a more or less uniform system the lad shall conduct his career of study; occasionally a plug is pulled out here or inserted there, altering only in minor ways the direction of the current.

In most of our medical schools, students are admitted on a plan so well defined that they progress from one year to another as in school. The facts are instilled into them in courses, and at the end of each a successful examination permits them to proceed to the next course or year to accumulate more facts. I would submit that, for the most part, this is instruction but is not education—there is a difference.

This inadequacy of our academic program has been the subject of adverse criticism for many years. We are, I hope, improving, but the recent Commission on Medical Education leaves no doubt in our minds that much remains to be done. The criticisms seem justified. And yet in our own country, and even more so in your great republic—thanks to generous foundations and individuals—the facilities, equipment and opportunities never were better. Scientific progress has gathered strength with amazing rapidity. A previous generation would have stood aghast at the achievement of the present century on behalf of the diagnosis and cure of disease. Measure as we may the progress of the world in other sciences, in the arts or in sociology, and there is no single achievement which can compare with the decrease in physical suffering in man, woman and child.

In education, as in so many other things, we are apt, I think, to pin our salvation on technic, for we live, as I said, in the environment of an age of efficiency. Instead of forcing the vital effort of discovery in the pupil, he is crammed to the full with facts, many of which he has no interest to learn, because the interest has not been instilled into him. It is the easier method. A full and new menu is provided, and he bites off a piece here and a piece there, rejecting what he does not like. This too happens not alone in the schools but even in our universities, so that many a student on this continent enters on his medical studies intellectually immature, necessitating a still further scholastic type of education.

In this era of standardization, mass production in medicine, as in material things, has become the vogue, if not the necessity. This implies organization, which, in turn, calls for suitable equipment, each year more elaborate; every addition to the equipment and buildings demands an increase in personnel and in expense. This wholesale production is, apparently, not an urgent need. The profession is said to be overfilled. We have

now come to a limitation of the numbers admitted to the medical schools, and—if I am correctly informed—the numbers will be still more limited in the future.

The only possible excuse—other than state control—for taking on more students than are required must be a financial one—they must pay for the extravagance in equipment. Is it not, perhaps, for this reason that medical and other education has become such an enormous burden on the student and on the community?

Not only is our medical education expensive, but it is prolonged; and the longer it is, the more expensive it becomes. It is a vicious circle, and the machine continues to revolve, producing graduates by the thousands. In this formidable effort, a decade passes before the aspirant can satisfy his desire to qualify for his life's work. By the time he has passed his hospital apprenticeship, he is nigh unto 30 years of age and inclined to offer hostages to fortune by assuming the responsibilities of matrimony. The enthusiasm of youth has, to a large extent, gone. Ten years before he stood at the foot of the hill eager for the journey, but the ascent has been long and rough, and now he is a bit weary. His most receptive, acquisitive and impressionable years have passed. In an age where so much is sacrificed to speed, it is not unreasonable to ask if the result has been worth the effort, or if at least some easier, more satisfactory route might lead young men and women earlier to become worthy to serve the suffering.

On this continent, 13,000 applied last year to study medicine. Only 6,000 were accepted. This was carried out by careful selection; in a few of the very best schools, the result was satisfying. The majority, at all events, had a university training in arts, with special study in the sciences.

As a matter of fact, however, in many of our universities the early years of training in arts and sciences are not as far reaching and are less thorough than the final years in the public schools of Europe and Britain.

Unfortunately, much of the present teaching at the university belongs more properly to the secondary schools. A student should arrive at a university more mature, capable, to some extent at least, of selecting his own education as a result of a good preliminary training. After such preliminaries, he would enter the medical school as to a graduate institution, and with all the self reliance and confidence necessary for self education. This, however, happens only to the few—such, for example, as are worthy of membership in this society.

It is true, we accept our students on a basis of credits and credentials—we all do that—and, where possible, the student is interviewed personally. Mistakes are not easily avoided, for sometimes the situations are difficult—sometimes even humorous.

In declining to accept one candidate, whose application was crude, illiterate and ill spelled—obviously the product of a backward boy—I ventured to state that, judging from his application, his preliminary education was scarcely adequate. He indignantly challenged the objection on the grounds that he could produce a recommendation from the professor of English in his own university—which he did. With experiences such as this, there is little doubt that the need exists for an intellectual stock taking. Apparently on this continent, both in Canada and in the United States, all men are

considered equal; there is not the same appreciation, perhaps, as in Europe of differences in mental discipline, in character and in intellectual ambition. In the English and in the German schools they do it somewhat differently—perhaps, too, somewhat better. After an excellent school training, with its unparalleled mental discipline, in which atmosphere counts for so much and intellectual ambition is fostered, a lad may matriculate either to the university or to the study of medicine. In the latter case, one year of special training suffices. No college years are demanded, but merely the qualifying examination. Granted the all important, good elementary education which he usually has in the gymnasium, the lycée or the public school, he enters on his medical career with the enthusiasm of youth, and after five or six years of study may attain his goal at the age of 25. By that time he is qualified to practice, and the examining boards see to it that he is not a menace to the public. The man, however, who aspires to distinction need not stop there. He goes on to higher degrees, qualifying himself for proficiency in one or other of the branches of his choice. Each one of these flights is barred by a rigorous examination, and qualification is no easy matter. This procedure he may begin earlier as a student of the biologic sciences through honors courses in the faculty of arts leading to a bachelor of science degree.

Here they all enter by the same general portal, guarded by the ogres of physics, chemistry and biology—unattractive so often in their presentation, unnecessarily dull, because devoid of any indication of their importance to subsequent work or the future medical career—so far removed, too, in years from the clinical work as to be, for the most part, forgotten by that time and hence not much more than a penalty and an ordeal. Whether or not the chemistry is that of commerce, the physics that of engineering, the biology inapplicable to medical problems, makes little difference. The main purpose seems to be that the student shall have credits for being exposed to two or three years of college instruction—not necessarily education, but often a type of advanced school teaching expressed in hours. It is doubtful whether the years spent in this way are really to the profit of the future student of medicine. If, however, he has been so fortunate as to pass the selection board, he is admitted to the medical school, entertaining the hope that now he will make human contacts, which will enable him to learn how to be worthy to practice his profession. Here, again, over a long period he is introduced to minute dissections, to kymographs and spectrosopes, test tubes and frogs, which are to provide the essentials of fundamental knowledge. Unless, however, these subjects are made not only instructive as pure sciences but equally applicable to his future work, the interest will flag and his long course of laboratory instruction will dull his sense of the human element in practice.

Courses in the biologic sciences are provided not for the accumulation of facts alone, in many of which he will not and cannot take an interest, but they are further intended to stimulate his powers of observation and right thinking. It does not always follow, however, that hours spent in a laboratory are synonymous with scientific thinking. For the better students this purpose is achieved, but for the man of average caliber—unless the instruction is of a very high order and the teacher of exceptional ability—the results are doubtful. To this the clinicians testify amply in later years.

It really would seem, for example, that in physiology twenty practical demonstrations out of a total of sixty on the neuromuscular system of the frog are of educational value only to the few, and certainly not of great practical value to the majority in later years. It goes without saying that the laboratories are essential, both for teaching and for diagnosis; but if these courses are too lengthy, not applicable and occupy most of the period of two years in this form of instruction, without any human contacts being made to explain their relation, the outlook of the student in his future procedure is somewhat perverted. The evil follows him in his clinical years, for, as he will soon learn when coming to the bedside, the application of laboratory investigations to the art of diagnosis has brought into existence a number of observers whose work is conducted away from the patient. True, their valuable help often enlarges the study, and so the art of medicine becomes more exact and confident. But, to the student, the results of these isolated observations are often so clean cut as to seem final, and, unless combined with a consideration of the whole clinical picture, the impression given to the student is a false one.

A better order of things will surely come to pass when the laboratory expert is not ordered about by the clinician from the distance but will be invited to frequent the wards, going with the clinician to the bedside in daily consultation when the need arises. There is much that each can learn from the other. Whether in chemistry or bacteriology, radiology or clinical medicine, mistakes would be less frequent, and the student and the patient would benefit equally.

Rather than divert his clinical investigation from the bedside, the student should be taught, first and foremost, to use his own plain senses, his eyes and ears and hands, which he always has with him. When, too, as a senior student, he observes, as he surely will, the hospital physician in his daily rounds, allowing his syndicate of laboratory workers, who never see the patient, to determine the final decision of a diagnosis and even to dictate the treatment, it is surely time that we reviewed the situation in the clinical field.

The evil is not wholly with our faculties but in the generally accepted system. The early preparation for medical study and the professional education leading to practice have eluded our control. More and more special and technical knowledge is demanded, and the burden is each year increased.

Each faculty member deplores the crowding of the curriculum, but, while abusing his colleague's policy, makes no reduction in his own. Curious, is it not, that no place now exists on our faculties for those who, like Sir James Mackenzie, have enjoyed the advantages of a large general practice and who therefore, from direct and personal contacts and experience, would best guide the destinies of the future practitioner of medicine.

Your National Board of Medical Examiners has recently stressed the need of more practical experience in the student's training, claiming that, prior to the inclusion of a hospital year in the curriculum the medical education had been far from complete. Such an arrangement suggests putting a patch over a nasty rent, and is, educationally, but a half measure of emergency.

The patient, as Dr. Hawthorne says, should ever remain the central feature of the problem—not the technician, not the laboratory attendants, not some

unknown official. The personal responsibility must rest with the doctor, who should have learned not so much the technic of the laboratory investigations as its significance.

RESEARCH AND PRACTICE

For the young physician in practice, laboratory research can be undertaken with credit only by the very few already well versed in method. Like Portia's suitor, the practitioner must choose between the casket and hazard all; it is rarely that one can serve two masters at the same time and do one's duty to both faithfully and well.

With the doctor, as with the fireman, when we want him, we want him badly. It is not enough to be told that he is in his experimental laboratory or at the golf club.

This is no new story, this discussion as to the respective importance of the art and science of medicine, this assumed domination of the laboratory over the clinical field. You may read John Brown's charming essay on the subject written in 1866 and readily imagine yourself reading the minutes of a faculty meeting in 1933. He emphasizes the primary necessity of attending to medicine as an art of healing not less than as a science of disease. We want more of the first than of the second, he says, for our age is becoming every day more purely scientific and is occupied far more with arranging subjects and giving names than with understanding and managing human beings. What fitted Harvey for his great achievement unfitted him for such excellence in practice as Sydenham attained. As his friend Aubrey said of him, "Though all his profession would allow that he was an excellent anatomist, I have never heard of any one who admired his therapeutic way."

Compare the fervor of the Sydenhams with the hard, cool, nonchalant style of many of our modern men of science, each of whom is so intent on his own little pebble, so self involved, and so self sufficient that his eyes and ears are alike shut to the splendors and the shadows. "A man wrapped up in himself makes a very small package," says Ed Wynn. There is, of course, always a temptation to push the contrast too far, for in reality the two run into each other. Art is often the strong, blind man on whose shoulders the lame and seeing man is crossing the river—it is one thing to discover and another to apply.

I recall with interest an invitation from our hospital, extended many years ago to the late George Ross, to assist us in a diagnostic dilemma concerning a patient over whom there was much controversy. It was an unusual skin lesion, an eruption, which left some uncertainty as to the presence of variola or some other infectious malady. Dr. Ross came and heard the history read. He asked for a second reading of the history, while he listened with his usual care. Walking briskly into the ward and to the bedside of the patient, he threw back the clothes, looked at the skin for a few brief moments and asked the patient one question only: "Have you ever suffered from nasal discharge?" On receiving an affirmative answer, Dr. Ross turned to the resident, saying, in his usual staccato fashion, "Glanders; good morning." On being challenged that he doubtless had seen many such cases and that the diagnosis must be an easy matter from his wide experiences abroad, he replied, "Ten years ago I saw my first case of glanders in Vienna; this is my second. Good day."

The instinct of observation was one of Dr. Ross's distinguishing characteristics. His motto then, as in the case of most clinicians of his period, was expressed in the terms *Ars medica tota in observationibus*.

The edifice of medicine rests entirely on facts; and the truth or the facts can only come from careful and complete observation, which surely is concerned, first and foremost, with the patient rather than the test tube. One of the outstanding defects in our system of clinical training has been a progressively diminishing observation of the patient himself, on the part both of our teachers and their staffs. By force of this example, the patient has become largely material for laboratory investigations, the human contact being submerged in the effort to establish the facts of the laboratory. The result of this new mode when carried to excess is that we tend to dissociate the personal relation of the pupil and teacher—so much so that clinical bedside instruction has become the Cinderella of the course. Surely more careful observation at the bedside, and the proper sifting of evidence by selection of essential facts, is equally a scientific method. Outpatient departments and the wards are the best clinical laboratories for the future practitioner, and the careful, patient investigation of every detail in the history of the symptoms and the signs is a hallmark of accuracy and a policy of wisdom. This, too, should give him a philosophical, as well as a scientific, approach.

This technic, which is as old as time and was the method of Hippocrates, Galen, Sydenham and Sir James Mackenzie, combines all the virtue of observation with the advantages of research. The great clinicians of every era have carried on their work through just such patient, thoughtful observations. Mead's careful study of the problem of contagion, as observed at the bedside, was followed by successful ventilation of ships in travel. Pringle's researches on gaol fever and on the housing of soldiers were clinical observations, rapidly followed by a great reduction in mortality. Captain Cook's successful journey of three years around the world in all climates and under many unfavorable conditions, with only one death among the 118 soldiers, was the result of clinical advice along similar lines. It was Fothergill's observations on resuscitation that enabled the Humane Society to organize its important work in England. The very recent and epoch-making work of James Mackenzie on the pulse and heart, carried on chiefly among private patients in an absorbing practice, is familiar to all. As a result of his clinical investigations, many popular misconceptions as to the seriousness of cardiac signs and symptoms were corrected, and heart disease lost much of its terror, both for the profession and for the public.

Surely the field of clinical investigation at the bedside has not yet been exhausted. It is only within a few decades that one of America's greatest physicians recorded the finding of a perforated appendix with a general peritonitis, but its significance was not recognized at the time. It required further observations and a collation of the facts by Fitz to determine a relationship that now is so very obvious to all. Had Anson, in his voyages, but made more careful clinical observation on the existence of scurvy among his men, it would have enabled him to effect an early cure. It was merely not observed at the time that the well fed officers were free from the disease, while only the sailors, whose diet was inadequate, suffered. In the same way, curiously enough, the incidence of scurvy in

Shackleton's expedition, despite more modern knowledge, was merely the result of neglect of attention to these well established clinical facts.

To the influence of Professor Louis of France, America owes much of its distinction in clinical medicine. He it was who inaugurated the numerical method, a system of clinical observations carried on over a series of cases sufficiently large to permit of conclusions being formed. After a period of four years' practice in Odessa, during which the mortality in children from diphtheria created in him a profound impression, he relinquished private work to pursue his studies. Seven years of patient observation convinced him of the value of facts collected at the bedside and led to his distinction as a Parisian teacher, to whom pupils from America flocked and from whom they came back to spread the influence of his doctrines. Such a man was the elder Janeway; so, too, were Billings and Senn, both natives of Wisconsin, and a host of others in America, who, though they shared in the advances of experimental research, never lost sight of the need for careful observations at the bedside. Byron Bramwell's observation clinics in his outpatient department in Edinburgh were a Mecca for graduates the world over, while Sir Charles Bell in surgery attained in a similar way a reputation so great as to warrant his selection as the central figure of Conan Doyle's masterpiece. Voltaire's appreciation of these faculties was well described in the familiar story of Zadig and the lost dog. The power of making good observations, a retentive memory, a fixed attention, and the habit of generalization were characteristics of all their clinical researches. These, the most important qualities of the physician, can be acquired or strengthened only by early, intensive and patient study. I merely stress the defect in clinical teaching which takes the student away from the patient.

In contrast to the clinical observations I would cite the competitive effort to place every medical school in the first rank, as a result of which expensive laboratories have sprung up, and with them a demand for research irrespective of quantity or quality of personnel, or the value of the thing "researched." Volume on volume of transactions are published yearly and bear ample evidence of the mediocrity of work which justifies the expenditure of neither the time nor the money. Is it any wonder that the cost of medical education is so high, and that, with the increasing cost of medical education, the expense of medical care takes a corresponding rise?

GRADUATE FACULTIES

A similar criticism in education in general has been with some justice launched at the crowding of our graduate schools with aspirants for higher degrees. Quantity, rather than quality, seems to be a matter of pride in some of our graduate faculties; one need but compare the number of students with the paucity of the staff to realize the impotence of such a scheme as a basis of education. Graduate study has become a system, and the acquisition of knowledge for its own sake has been superseded to a very large extent by mass effort, just as the horse has been superseded by the automobile in our desire for speed.

In the course of conversation with the leaders of a large pulp and paper industry, it was suggested that our university should offer special training to qualify men for the paper industry, more particularly on its chemical side, to which the president of the corporation

replied, "If you can send us men with a good fundamental education and a wide knowledge of chemistry in general, it will be an easy matter for us to train them in the more special technical lines of this industry." In other words, they ask that we supply the properly trained men, with a wide and deep general knowledge of their subject, who can undertake any job at the word "Go," not because of their knowledge in a limited field, but rather because their broad education has given them self reliance, judgment and experience.

Every engineer will tell you that it is the knowledge of fundamental mathematics that determines the difference in quality of one engineer from another, the good one from the bad. This indeed strikes at the root of the matter. In the race for higher degrees, they have become, as it were, a kind of union label, a badge of the gadgeteer. So insistent has been the demand on the part of school boards and certain commercial houses for doctors of philosophy that our graduate school has been crowded with men, who, despite a lacking in fundamentals, have been permitted to engage in one restricted investigation, the carrying out of which is often synonymous with the attainment of the coveted honor. The thing has become a racket. The same holds true in all lines of study, most of all, perhaps, in pedagogy. In one university, for example, there are fifty different courses on physical education; in another, fifty on administration, including janitors. In another there are thirty-six on elementary education. But the racket will run its course. The ability to teach others is something much more human and exalted than this, but until some better means can be obtained to produce good teachers and give them recognition and scope and status, I see no salvation. As it exists today, it is largely a feudalism of administrative barons and teacher serfs.

Examine, if you will, the curriculums of most of our universities, and you will find not only so many subjects in the curriculum but in each such a variety of courses that obviously the time is insufficient for the acquisition of the subject matter to be taught. Courses are characterized by their specialism, not by their fundamental and general education. No, the machine age has not yet reached its maximum. We are slaves to the system—the course system and the "credits" system. What we need, however, is more of the fundamental, broad education, that we may build on a satisfactory foundation whatever specialized and graduate study we may venture later to undertake.

Despite the apparent tone of pessimism throughout these remarks, may I confess, in conclusion, not only to a great appreciation of all that has been and is being done in medicine on this continent but also to an unswerving optimism for the future. This country cannot but progress. Evils we foresee often do not come to pass. Nothing is so good or so bad as we expect. As Sir Andrew Macphail so aptly says, "A pine tree does not grow up to the skies, nor a man's whiskers to the ground."

Some of the greatest clinicians in the world were born and trained on our own soil. American discovery has played a significant part in medical science. European students are sent here annually in large numbers to learn of our methods and of our experience. In elementary and fundamental education, however, we need to understand more clearly our aims and objectives in the training of medical undergraduates. We seem to have fallen between two stools. The subject matter

and arrangement of our curriculums suggests that either our ambitions in pure science are too exalted or our efforts to make general practitioners are inadequate. After all, with the splendid achievements of modern medicine and the advantages that are being offered in the cure of disease, there never was a more opportune time for good, honest, well trained, general practitioners. It is what the world most needs here and now.

Samuel Harvey tells us that 80 per cent of all maladies that human flesh is heir to can be satisfactorily cared for by the well trained general practitioner, and without the aid of specialists.

A pity, is it not, that the public has never been sufficiently enlightened on the value of a well trained family physician, and how much better served people would be were they to leave it to him to say when and where advice of this special kind should be sought. The cost of medical care would be less, the results would be more satisfactory, and there would be less occasion to solicit the aid of the irregular practitioners of the various cults. We cannot, however, find fault with the public if it chooses to buy its thimbles at a jeweler's rather than get an equally satisfactory article cheaper elsewhere.

The cure for our ills in medical education goes back, in reality, to the secondary schools. If we are to improve our system of undergraduate teaching in arts or in medicine, we must take the long distance view of our needs and our defects. It is futile to tinker with the engine room when the ship is headed toward the rocks. By that time the matter belongs to the navigator. If, on the other hand, we are sufficiently far away from land, the policy of reconstructing the engine room becomes desirable.

And so, applying this metaphor of Professor Clarke's to our secondary schools, something might be done to obviate the terrible waste, the dry rot of the unused faculties of childhood. While I would insist on a sound elementary education for every child, more discrimination should be exercised in the admission to more advanced studies of so many children who are unfitted for an extension of knowledge. Our universities are already loaded down with the burden of instructing boys and girls, many of whom would be much better occupied in other spheres of work.

We shall look forward to the time when our schools may offer a still better mental discipline and a still better environment to prepare the young people for their future career.

Most important is it to elevate the status of the school teacher to employ such only as have background, refinement, and so broad a general education in every sense of the word that the profession of a school teacher may be thereby more and more respected and appreciated. To impart the essentials of an accumulated store of existing knowledge is no easy task and should be entrusted only to those who are worthy of the responsibility. Only, perhaps, when the emoluments of the teacher render that profession more inviting is there any hope.

In some of our older countries the stipend of a well prepared teacher is an index of the respect and appreciation of the functions of the teacher in the school. The salary, for example, of a headmaster, say in an English school, would make the president of many a large business corporation here envious. Until such time arrives, too, at which the schools accept greater

responsibility for a still more advanced education and relieve the universities of much elementary training, we shall not have completed our task. Under existing conditions, universities are compelled to follow, not to lead, the schools on the questions of curriculum. Ninety-five per cent of the universities on this continent accept responsibilities for teaching subjects which properly belong to the secondary schools, and much of this instruction is given, as it were, by subcutaneous injection, not as a matter of real education.

The title too of university professor has ever been one of respect and dignity in the past; it should be more difficult to attain than is the case at present. Universities and medical schools are conspicuously overstaffed at the top with so large a professional personnel that the title has lost not only a great deal of its distinction but likewise its importance and its power, its respect and its dignity. Columbia University has 178 professors in its medical school. The University of Göttingen is content with 32, and the University of Breslau with 59. I would submit that fewer clinical professors in all our medical schools would be an advantage; that each should attain his rank not alone because of any special knowledge or scientific achievement but rather because of a wide, general education and experience, in which the gifts to inspire and impart are paramount qualities. The tenure of office should be given a temporary trial before permanence is granted.

The process of making a practitioner of medicine needs still more revision if its main objects are to be achieved. The teaching of a medical student is a serious obligation, and the better it is done, the greater is the respect for and influence of the teacher. With an improvement in our attitude toward education in general, our medical schools would naturally attract and select a far better educated type of student for the pure sciences, and a more self reliant, dependable general practitioner. Our faculties could then adopt a much more flexible curriculum, permitting an unembarrassed choice in medical education, which does not of necessity follow the methods as prescribed in our secondary schools.

Our courses for the general practitioner might reasonably be curtailed, while, at the same time, every facility might be given, as at present in the British system, for advancement in the fundamental sciences and the specialties.

To the senior teacher should be allotted, most of all, the elementary medical education of the future practitioner. He alone should preside over the teaching in the outpatient department, where the student will meet more commonly than elsewhere the conditions to be encountered in his later practice. Most of all should they appreciate the difference between the essentials and the nonessentials, and the prime importance of careful observation of the patient himself. Faculties would then gradually realize that there are two types of undergraduates to be educated in our medical schools—the one for sound, scientific practice of medicine, and the somewhat different type of pure scientist and specialist. Each is of capital importance, but, in the latter case, a more elaborate training is required for the special field. With all the study devoted in recent years to medical education, we can surely hope that in the near future the making of a practitioner will be less involved and complicated and that America will still more successfully compete with older countries in the training of its youth.

DOES OUR DIETARY REQUIRE VITAMIN A SUPPLEMENT?

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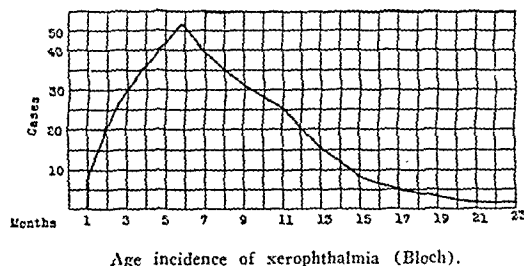
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In spite of great and rapid advances in knowledge concerning the rôle of the vitamins, there is a striking difference of opinion as to the requirement of these essential factors. Some believe that, under normal conditions, the peoples of the United States and those living in countries similarly situated economically need not be concerned as to the fulfilment of their vitamin requirements. Others are of quite the contrary opinion. This divergence has centered mainly on vitamin A, variously termed the fat-soluble, growth or anti-infective vitamin. Although the necessity of including this vitamin in the dietary of both animals and man is universally conceded, especially for the young, there is nonagreement as to whether the bodily needs are being adequately met and, accordingly, whether there is danger of a deficiency of vitamin A leading to latent forms of nutritional disturbances.

For several years we have been actively interested in this problem. In the first place, it is one which must



Age incidence of xerophthalmia (Bloch).

necessarily concern those in charge of child-caring institutions, for, although the incidence of diarrheal disorders or "summer complaint" has, during the past decennium, signally fallen in institutions harboring infants, respiratory infections, in other words, "winter complaint," with its attendant high mortality, have continued to thwart all efforts. Furthermore, this problem is essentially pediatric, in that the greatest susceptibility to vitamin A deficiency occurs during early childhood. Indeed, if one glances at the curve of incidence of xerophthalmia, representing the classic cases of Bloch of Copenhagen, one sees that the fastigium is reached at 6 months of age, as shown in the accompanying chart. Infancy, therefore, must be regarded as best suited for a study of the clinical manifestations of vitamin A deficiency, especially in its incomplete and subtle forms.

Some years ago, it will be remembered, ultraviolet radiation was widely acclaimed as a valuable protective agent against respiratory infections. However, a thorough clinical test in our institution failed to demonstrate that this therapeutic agent is of decided benefit in this respect. The morbidity and mortality of respiratory diseases proceeded apparently uninfluenced by systematic irradiation with the mercury vapor lamp throughout one winter and with the carbon arc lamp during the succeeding winter. Disappointed in this effort, three years ago we turned to vitamin A as a

preventive against infections, more particularly those involving the respiratory tract. It should be mentioned, however, that our previous experience did not seem to warrant the labeling of this nutritional factor as "the anti-infective vitamin." Only the year before, in a study carried out to ascertain whether mild rickets, the common type of this disorder, induced susceptibility to respiratory infections, we found that such was not the case but that infections of this kind, mild as well as severe, developed quite as often among the 100 infants who had been protected by means of standard doses of cod liver oil as among those who had not received this medication, which is rich in both fat-soluble vitamins A and D.

During the past three years we have attacked this problem more and more systematically, hoping to be able to reduce the great number of infections of the respiratory tract or at least to mitigate their severity and decrease the occurrence of pneumonia. In the winter of 1930-1931, a painstaking investigation of this problem led to failure.¹ Without reciting the details of this study, which are to be found in the original report, it may be stated that large series of infants were given a diet especially rich in vitamin A—including not only milk but butter as well as vegetables—and that, in the course of an observation period varying from four months to a year, all these infants developed one or more infections. Furthermore, it proved to be immaterial, from the point of view of susceptibility, whether the infants received amounts of vitamin which were far above the established dosage. Our efforts during the succeeding winter met with no better result. Respiratory infections occurred apparently to an unabated degree among a group of infants that were given the benefit of a large addition of vitamin A in the form of a supplement of cod liver oil. Moreover, not only were the infections increased from a relative point of view but the absolute number of infections in the institution was unusually high.

This past winter we have again carried out a clinical investigation of the protective potency of vitamin A, the main difference in procedure being that higher dosages were used, that carotene was given to one of the groups of children and that a large control group was placed under observation under what must be regarded as almost identical hygienic and nutritional conditions. It seems hardly necessary to enter into a detailed description of the nature of the institution, of its facilities or of the type of children which it harbors. These important factors have been described repeatedly in numerous papers emanating from our institution. Suffice it to say that it is a model child-caring home, favored by an exceptionally low mortality; that it cares for children under the age of 3 years, and, more particularly, that the dietary, the supply of fresh air, the quarantine system and the nursing are subject to such regulation as to make living conditions exceptionally uniform. At the end of November, forty children were given a daily supplement of haliver oil and viosterol; forty others of about the same ages, a supplement of carotene in oil and viosterol, and eighty, viosterol with no additional vitamin A. The dosage of haliver oil was 0.5 cc., or 20 drops a day, which contained about 20,000 A units; the daily dose of carotene was one teaspoonful, which likewise represented about 20,000 units; the eighty infants comprising the control group did not receive a supplement of vitamin A but, as

stated, were given viosterol in order that their anti-rachitic needs might be adequately covered. All three groups received 20 drops daily of viosterol 250 D. The period of study covered a span of five months, ending about the first of May. It comprised, therefore, the season of highest incidence of respiratory disorders. Careful notation, for which we are indebted to Dr. Morris Krosnick, was made in regard to the occurrence not only of pneumonia, bronchitis and pharyngitis but also of otitis media, conjunctivitis and skin infections; temperature readings were taken three times a day, and weighings once, twice or three times a week, according to the age of the child.

In addition to this study, an investigation was carried out last summer to ascertain the relative incidence of "colds" or summer respiratory infections within the institution. The idea underlying this part of the study was that supplements of vitamin A might be able to prevent the mildest type of respiratory disorder and that such a group might give a definite indication of protective action from cod liver oil. A third part of

TABLE 1.—Comparative Incidence of Infections Among Groups of Children Receiving and Not Receiving Vitamin A Supplement

Group	No. of Children	Infections				Infec-tions per Infant (5 Mos.)	Pneu-monia	Otitis Media	Deaths
		Total	Mild	Mod-erate	Se-vere				
Vitamin A*	77	245	125	60	60	3.5	8	31	2
Control....	75	241	143	52	46	3.3	4	23	0

* Includes infants given haliver oil or carotene.

the investigation was a test to ascertain whether vitamin A exercised any influence in regard to skin infections. It was thought worth while to institute a study of this kind, as some observers had reported that impetigo and boils occurred less frequently when cod liver oil was given. Fourthly, inquiry was made in regard to the occurrence of night blindness throughout the United States. This method of approach seemed promising in view of the fact that night blindness is the most delicate indicator of a lack of vitamin A in the dietary; it is, in fact, the most delicate indicator known in relation to any of the vitamins, for it gives evidence of a deficiency by a symptom that is purely subjective, occurring before the least pathologic change can be detected, indeed before any abnormal changes are discernible by means of the ophthalmoscope.

The results of the tests with haliver oil and with carotene are summarized in table 1. Since approximately the same number of units were given daily in the form of the provitamin and of the vitamin, and since the outcome proved to be the same under either form of medication, the data have been combined to render the survey clearer and broader. A glance at table 1 shows that, as was to be expected, the eighty cases on vitamin A supplement as well as the eighty controls became slightly reduced in number during the course of the winter, so that by April only seventy-seven and seventy-five infants, respectively, remained in the two groups. A review of the figures indicates that mild infections were somewhat more frequent among the control group and severer infections were higher among the vitamin A group. The number of infections per infant during the five months observation period was about the same; each suffered from a respiratory infection about 3.5 times in the course of

1. Barenberg, L. H., and Lewis, J. M.: Relationship of Vitamin A to Respiratory Infection in Infants, J. A. M. A. 98: 199 (Jan. 16) 1932.

the winter. Turning to the record of complications, one will note that eight children developed pneumonia among the vitamin group whereas only four developed this disease among those who were not receiving additional vitamin. If the case is added of an infant who developed pneumonia while receiving cod liver oil and who did not strictly belong in the study, the vitamin cases are increased to nine, and if, in a similar manner, one adds a patient who may well be considered a control although he did not receive viosterol and two others who may likewise be regarded as controls and were getting irradiated milk, the cases of pneumonia in the control group are raised to seven. From whatever point of view the outcome is regarded, it is clear that the incidence of pneumonia was even higher in the group which received vitamin A supplement than among those which received no such supplement. It will be noted that no distinction could be drawn between the occurrence of otitis media among those receiving and those not receiving additional vitamin A. This result bears out the recent experience of Sutliff, Place and Segool,² who found that large doses of cod liver oil did not serve to prevent this complication following scarlet fever.

Table 2 is appended in order to emphasize the importance of the factor of age in studies relating to the incidence and severity of infections in infants. By a division of the clinical material into five groups, it likewise shows that there is a consistency in the data and that a consideration of every one of the five age groups leads to the same conclusions; namely, that the infants who received vitamin A preparations manifested no advantage in regard to resistance to infection as compared to those of similar age who were getting merely the standard diet. Age is of such peculiar importance in interpreting a study of this kind among infants that we have reproduced the age distribution of children in our institution for a ten-year period in

TABLE 2.—Age of Infants in Relation to Incidence and Severity of Infections

Group	Ages, Years*	Infections				Infections per Infant (5 Mos.)
		Total	Mild	Moderate	Severe	
Vitamin A.....	0-½	4	2	2	0	0.8
Control.....	.....	5	3	2	0	0.85
Vitamin A.....	½-1	88	31	28	29	4.1
Control.....	.....	71	36	14	21	3.3
Vitamin A.....	1-1½	55	26	11	18	3.8
Control.....	.....	73	45	17	11	4.1
Vitamin A.....	1½-2	27	16	3	8	3.0
Control.....	.....	21	13	2	6	3.3
Vitamin A.....	2-3	71	51	14	6	3.3
Control.....	.....	71	46	17	8	3.4

* Infants falling within two age groups have been included twice. Some infants were in an age group only two or three months.

relation to the occurrence of pneumonia (table 3). The outstanding figures in this tabulation will be found in the last column, which shows that among 6,894 children under the age of 5 years, somewhat over 4 per cent developed pneumonia during the first six months of life, 13 per cent during the second six months, 15 per cent between the first and second year, and that thereafter the percentage of incidence rapidly and regularly fell. It may be added that data compiled subsequently have served to bear out the relative immunity of infants to respiratory infections during the first half year of

their lives. Furthermore, in an examination of data covering a subsequent three-year period, it was found that infants between birth and 3 months of age are even less susceptible than during the period of from 3 to 6 months.³ These figures have a particular application to our problem. It is evident that the age distribution of xerophthalmia, as shown in the accompanying chart, bears a reverse rather than a direct relationship to the age distribution of respiratory infections in infants. The first six months of life, the time of relative nonsusceptibility of infants to infections, is the very period of high incidence of xeroph-

TABLE 3.—Age Distribution in Relation to Pneumonia for a Ten-Year Period

Age	Population, 1916-1927	Per Cent of Total	Cases of Pneumonia, 1916-1927	Case Rate per Age Group, per Cent
0 to 6 months.....	505	7.3	22	4.3
6 months to 1 year.....	739	10.7	106	13.0
1 year to 2 years.....	1,302	20.2	214	15.4
2 to 3 years.....	1,318	19.1	105	8.0
3 to 4 years.....	1,317	19.1	41	3.1
4 to 5 years.....	1,623	23.6	17	1.0
Totals.....	6,894	100.0	505	7.3

thalmia—the prototype of vitamin A deficiency. Considering this phenomenon of age susceptibility from the standpoint of the store of vitamin A which has been found in the body, there is general agreement that the new-born infant is distinguished by an exceptionally low fund of this vitamin at the time of birth. Indeed, Wolff⁴ found that the livers of 60 per cent of new-born infants contained none of this vitamin whatever and that those having a store at birth contained this factor in but small amount. The same deficiency at birth has been found by Dann⁵ to hold true for rats and by Busson and Simonnet⁶ for the livers of puppies. Evidently the outstanding resistance of the very young infant to respiratory infections, in comparison to the older infant, cannot, whatever its nature, be ascribed to an exceptional supply of vitamin A. It should be added that, from the point of view of the postnatal supply of vitamin A, conditions in our institution favor the infant from 6 to 18 months of age, as it is during this period that vegetables, eggs and butter are regularly added to the dietary.

The study of the groups was approached from another angle. Ten among the total 160 infants were picked out for having developed the greatest number of respiratory infections during the five months experimental period. Likewise, ten infants were garnered as distinguished for having shown the least number of infections during the same period. A comparison of these extreme groups should give information as to whether nonsusceptibility could be related to giving vitamin A and high susceptibility to a lack of administration. On consulting the records it was found that five of each group, of the susceptible as well as the nonsusceptible, had been receiving a supplement of vitamin A and that five had not received the supple-

3. Were it not for this marked nonsusceptibility of the new-born to respiratory infections, the infant mortality in lying-in institutions would be far higher. When one considers the close quarters in which they are frequently kept, the scant allowance of cubic air space which is provided and the numerous adults with whom they are in contact, it is most fortunate that the new-born infant brings with it into the world a heightened degree of nonsusceptibility to infection.

4. Wolff, L. K.: Vitamin A in Population of Amsterdam, Arch. néderl. de physiol. 14: 262, 1929.

5. Dann, W. J.: The Transmission of Vitamin A from Parents to Young in Mammals, Biochem. J. 26: 1072, 1932.

2. Sutliff, W. D.; Place, E. H., and Segool, S. H.: Cod Liver Oil Concentrate (Concentrated Vitamins A and D): Ineffectiveness of Large Doses in the Prophylaxis of Otitis Media Complicating Scarlet Fever, J. A. M. A. 100: 725 (March 11) 1933.

6. Busson, A., and Simonnet, H.: Variation in the Content of Vitamin A in the Liver of Dogs According to Age, Compt. rend. Soc. de biol. 109: 1253 (April 29) 1932.

ment. No distinction was noted, in regard to protective action, between the haliver oil and the carotene.

As stated, a test was carried out to ascertain whether the addition of cod liver oil to the diet would prevent what may be termed "summer respiratory infections." By this is meant "colds" which occurred during the summer and were accompanied by a rise of temperature to 100 F. or over. These infections are very mild and rarely associated with complications, so that it was thought that this clinical material would be most favorable for a demonstration of the anti-infective value of vitamin A. As may be noted in table 4, seventeen infants received cod liver oil and thirty-nine received merely the ordinary diet. The age of the two groups was similar, an average of about 5 months. The period of observation was July, August and part of September. The result of the study may be summarized by the statement that the advantage, from the standpoint of mild infections, was rather with the "nonsupplemented group," which had an average of 0.6 infections in the course of the two months period, whereas the "cod liver oil group" developed approximately 1.3. A somewhat similar study, carried out during the preceding winter, in which the infants were somewhat over 7 months of age and in which one group was given cod liver oil and the other viosterol, showed no advantage in favor of vitamin A; on an average, the infants

TABLE 4.—Comparative Incidence of Mild Infections, During the Summer, Among Groups of Infants Receiving and Not Receiving Cod Liver Oil

Group	No. of Infants	Age, Months	Average Period Observed, Months	Infections	
				Total	Per Infant (per 2 Mos.)
Cod liver oil.....	17	5.7	2.0	27	1.3
Control.....	39	5.1	2.7	32	0.6

developed an infection every month. As a deficiency of vitamin A is known to be associated with characteristic lesions of the skin and epithelial tract, as has been conclusively shown by the investigation of Wolbach and Howe,⁷ attention was directed throughout the winter to local disturbances of ectodermic tissues. Microscopic examination of the urine and of the vaginal secretion failed to show an excess of epithelial cells among the control cases as compared to the infants that received the vitamin A supplement. This likewise held true for the larger groups that were under observation during the past winter.

The number of cases of impetigo was approximately the same in the two groups. There were fifteen instances occurring in fourteen children; seven were receiving vitamin A supplement and seven were not. The instance of twofold infection involved an infant who was given carotene and who developed the skin infection in December and again in January. This aspect of the study was subjected to a clinical experiment by carrying out a series of smallpox vaccinations among infants representing the two groups. Eighteen of the children had received three teaspoonfuls daily of cod liver oil for at least one month, and nine had not been given any vitamin A preparation. Among the former group, the mild local reactions numbered thirteen and the severe five, whereas among the latter the mild reactions numbered seventeen and the severe two; one of the severe reactions occurred in an infant who had been getting cod liver oil for over a year. It seems

hardly necessary to give in detail the data regarding the systemic reactions. Suffice it to state that, in general, they favored neither group; of the four patients who reacted with high fever, three were receiving cod liver oil.⁸

A word should be added in regard to the occurrence of conjunctivitis during the five months period, as this tissue seems to be highly sensitive to a deficiency of vitamin A. Our clinical evidence in this regard may be dismissed with the statements that of the fourteen children developing conjunctivitis, seven belonged to the control group and seven to the vitamin group.

As is well known, one of the earliest evidences of a deficiency of vitamin A in later childhood and in adult life is the development of night blindness, a condition characterized by defective vision at night or when the light is dim. This accords with the observations that the retinas of various animals have been found to be especially rich in vitamin A. In 1931, Spence⁹ of Newcastle reported cases of night blindness as well as nutritional xerophthalmia occurring sporadically in an urban industrial population unassociated, however, "with any unusual instance of general infections or lowered resistance." This report seemed worthy of attention and investigation in spite of the fact that Dr. Spence¹⁰ has stated that he has seen no further cases of xerophthalmia "since the spring of 1931"; in other words, for a period of two years. In view of this experience, it seemed worth while to carry out a formal inquiry among the leading ophthalmologists throughout the United States to ascertain, in the first place, how often they encountered instances of night blindness and, secondly, whether this striking disorder had increased in frequency during the past year or two, owing to the stress of economic conditions. Accordingly, a questionnaire covering the subject from this point of view was sent out by Dr. Kirby and one of us (A. F. H.) to the various members of the American Ophthalmological Society. A detailed report of this investigation is being published elsewhere.¹¹ It may be summarized, however, by the statement that in all parts of the United States night blindness was reported to be of exceptional occurrence and xerophthalmia rare. Few of the specialists had encountered cases of this kind during the past few years. This experience is in accord with the scanty reports in the literature, as may be noted by consulting the volumes of the *Quarterly Cumulative Index Medicus*; the volume for the latter half of 1932 contains no reference whatever to night blindness. Furthermore, the consensus is that there is no indication that either of these diseases has increased in frequency during the economic depression. As both of these disorders of the eye result from a deficiency of vitamin A, the deduction would seem to be warranted that a lack of this vitamin is extremely uncommon among the child and adult population. Such a conclusion would seem to be all the more justified in view of the fact that night blindness is a very early symptom of vitamin A deficiency, occurring before any ophthalmologic evidence or microscopic lesion can be noted in the retina. Indeed, it is as yet the only characteristic subjective symptom known in connection with the symptomatology of the deficiency diseases.

7. Wolbach, S. H., and Howe, P. R.: Vitamin A Deficiency in the Guinea-Pig, Arch. Path. & Lab. Med. 5: 239 (Feb.) 1928.

8. As a filtrable virus is supposed to be the etiologic agent of vaccinia as well as of the common cold, it seemed as if vaccinia might be especially suited to serve as the control disorder in a test of anti-infective potency.

9. Spence, J. C.: A Clinical Study of Nutritional Xerophthalmia and Night-Blindness, Arch. Dis. Child. 6: 17 (Feb.) 1931.

10. Spence, J. C.: Personal communication to the authors.

11. Hess, A. F., and Kirby, D. B.: The Incidence of Night Blindness in the United States: A Gage of Vitamin A Deficiency, Am. J. Pub. Health, to be published.

In the rat, as soon as the store of vitamin A has been depleted, a cessation of growth comes about. In fact, this phenomenon is used as one of the standard criteria in assaying products for their content of this vitamin. In infants, under clinical conditions, the relationship between growth and the supply of vitamin A is by no means intimate, as was pointed out by Hess and Unger¹² in 1920 in connection with a study of some infants who had received a minimal quota of this vitamin for a period of many months. Were we to use growth as a criterion of adequacy, we should conclude that the infants in our institution who are on a diet consisting of diluted pasteurized milk and cereal are receiving sufficient of this vitamin, for we have rarely been able to bring about a gain in weight simply by the addition of cod liver oil. With this point in mind, we have compiled and charted the weights of the two groups of infants studied this winter (table 5). It is evident at a glance that no distinction in this respect can be drawn between the vitamin A and the control group. At every one of the five age periods approximately the same gain was made during the course of the winter.

Large amounts of an oily solution of carotene were given daily, a teaspoonful or the equivalent of about 20,000 rat units, which represents the extract of about 60 Gm. of dry carrots or 500 Gm. of the fresh vegetable. It was decided to give this high dosage for several reasons: In the first place, we wanted to eliminate any question as to whether an adequate amount had been given, an important consideration in regard to a therapeutic agent which has been in use for only a short while. Furthermore, there is little or no information regarding the conversion in man of carotene, the provitamin, into the active vitamin. In fact, Moore¹³ has reported that in animals the conversion of the one into the other is by no means quantitative from the standpoint of efficiency. There is one phenomenon that is of interest and worthy of mention. Almost all the children developed, to a greater or less degree, the yellow discoloration of the skin for which, in 1919, Hess and Myers¹⁴ coined the name carotenemia. This clinical development is striking and gains added significance in the present study, as it must be interpreted as denoting that the infants who received the carotene supplement were saturated with this substance and had an excess from which to elaborate vitamin A. The yellow color makes its appearance in definite locations, more particularly at the thenar eminences of the palms and on the soles of the feet, as well as along the *alae nasi*. There is some variability in localization and still more marked individuality in regard to the intensity of pigmentation. No child was absolutely spared throughout the five winter months. Five, however, may be considered as having developed very mild pigmentation, and five of the forty were designated as ++++, indicating the severest grade of coloration. The blood of the patients was carefully examined, a detailed report of which will be presented elsewhere. It should be noted especially that the blood platelets, which some have considered a valuable indicator of a deficiency of vitamin A, were not increased in carotenemia. As was to be expected, the yellow discoloration of the skin

paralleled, in a general way, the intensity of yellow color in the blood serum. Making use of a color standard composed of solutions of potassium bichromate of several intensities, as has been suggested by others, it was found that the carotene per hundred cubic centimeters of serum was about 0.975 and 0.760 mg. in the most marked cases, falling to less than 0.1 mg. in the mildest cases. Since xanthophyll and bile may be present in the serum, care must be taken that these pigments are not confused with carotene; a separation can readily be made by means of appropriate solvents. These figures for carotene in the blood refer, naturally, only to the patients who were receiving carotene; those who were receiving haliver oil had a very small amount of carotene in the blood. On the other hand, they were found to have about 2 or 3 blue units, representing vitamin A, per hundred cubic centimeters of serum. This small concentration accords well with the result of other investigators and shows how little vitamin A is to be found in the circulating blood. The carotene cases showed no "blue units" in the blood, as estimated by the Lovibond tintometer.¹⁵

As is well known, about four years ago Mellanby and Green¹⁶ reported that, to a certain extent, they were

TABLE 5.—Comparative Gain in Weight of Children Receiving and Not Receiving Vitamin A Supplement

Group*	Age	No. of Infants†	Average Gain per Child During 5 Mos., Pounds
Vitamin A.....	0-6 months	9	7½
Control.....	.....	11	7½
Vitamin A.....	6-12 months	30	2½
Control.....	.....	31	3¾
Vitamin A.....	12-18 months	25	2½
Control.....	.....	23	2½
Vitamin A.....	18-24 months	19	1¾
Control.....	.....	15	1
Vitamin A.....	2-3 years	26	1¼
Control.....	.....	25	1¼

* Includes infants given haliver oil or carotene.

† Infants falling within two age groups have been included twice.

able to prevent puerperal sepsis by giving a vitamin A concentrate, and that a lack of this vitamin is largely responsible for this serious form of infection. We have had no personal experience with this type of case, but it should be recorded that in the following year eighty-six patients in Glasgow¹⁷ received treatment with vitamin A after the same manner, under the direction of Mellanby and Green, and that, "on the whole, it was concluded that although vitamin A may gradually increase the general resistance and the organismal infection may thus be controlled, this does not reach a degree sufficient to deter any but the least virulent types of sepsis, in which a similar effect could be obtained by less specific measures." Clausen has mildly advocated the use of vitamin A in the prophylaxis of respiratory infections in children, stating that carotene "may confer some degree of protection" and that this vitamin "is involved rather conspicuously" in these disorders.¹⁸ The preponderating evidence in favor of the anti-infective virtue of this vitamin, however,

12. Hess, A. F., and Unger, L. J.: The Clinical Role of the Fat-Soluble Vitamin: Its Relation to Rickets, *J. A. M. A.* 74:217 (Jan. 24) 1920.

13. Moore, Thomas: Vitamin A and Carotene: IX. Notes on the Conversion of Carotene to Vitamin A in the Cow, *Biochem. J.* 26:1, 1932; 25:275, 1931.

14. Hess, A. F., and Myers, V. C.: Carotenemia: A New Clinical Picture, *J. A. M. A.* 73:1743 (Dec. 6) 1919.

15. The nurses as well as the physicians remarked repeatedly that the breath of infants receiving carotene in corn oil had an odor of onions, which was at times sufficiently strong to permeate the ward. Others have noted this peculiarity, which may take place even when the dosage of carotene is far less.

16. Mellanby, Edward, and Green, H. M.: Vitamin A as an Anti-Infective Agent, *Brit. M. J.* 1:984 (June 1) 1929.

17. Report of Medical Officer of Health Glasgow, 1930, p. 143.

18. Clausen, S. W.: The Influence of Nutrition on the Respiratory Infections of Infancy, *New York State J. Med.* 31:83 (Jan. 15) 1931; Carotenemia and Resistance to Infection, *Am. J. Dis. Child.* 42:698 (Sept.) 1931.

has not been clinical but has emanated from the laboratory. Interesting assays of the content of "blue units" of human livers have been carried out in various countries in the course of the past few years. Investigations of this character have been reported by Moore,¹⁹ Wolff,⁴ Fox,²⁰ Vogt²¹ and others. In the main, livers have been assayed by means of the tintometer, with the object of ascertaining whether a definite distinction in unitage could be found between the livers of those who died by accident and those who succumbed to sepsis or other infection. In general, it may be stated that the figures varied greatly and that no parallelism could be observed. Underlying these tests there was always the unanswered question as to how much vitamin A had been consumed in the course of the infectious disease; in other words, to what extent the "blue units" represented the store in the liver previous to the fatal illness. The most recent publications are the article of Vogt, who concluded, as the result of a titration of some 300 livers, that sepsis did not deplete the liver, and that of Fox, based on an examination of seventy livers, who summarized his results to the effect that "vitamin A reserves are of far less importance than the virulence of the infection and the general condition of the patient." The only liver we have had an opportunity to assay was that of an infant who had been receiving haliver oil and viosterol for four months and died of pneumonia and meningitis. This organ contained 275 "blue units" per gram, which is an average amount.

Great caution must be exercised in making use of laboratory experiences in evaluating the clinical needs of the vitamins. One of the most surprising phenomena in connection with investigations in this new field of nutrition has been biologic variability, depending on species and numerous attendant circumstances. The requirement of the rat has too largely dominated the conception as to the vitamin requirement of human beings. And yet even the rat needs only infinitesimal amounts. As Mendel writes regarding the rat: "The vitamin A in the daily intake represents at most a magnitude of approximately one part in a million parts of body weight. Such are the amazingly small concentrations of certain chemical substances that spell well being versus the nutritive failure that ensues without them."²² Laboratory workers are well acquainted with the difficulties associated with rendering the casein, in the standard deficiency ration, sufficiently vitamin free to bring about successfully xerophthalmia and cessation of growth. It has also been found that the pig, whose metabolism resembles that of man, also "has a vitamin A requirement of a very low order; if the animal gets an occasional run on pasture, there is no need to worry further about this vitamin."²³ Rice²⁴ found that enough vitamin A is stored in the sow during a protracted period of adequate feeding to supply the requirements of two litters of pigs up to weaning time.

We are not unaware of or insensitive to the fact that there are latent forms of the deficiency disorders. In fact, some twelve years ago one of us pointed out that "clear-cut disorders should not be regarded as the

most common or important result of food deficiencies," and that physicians will have to address themselves to "obscure alterations of nutrition, ill defined functional disabilities, which cannot be characterized or even recognized as disease."²⁵ In regard to other vitamins, the optimal clinical requirement has been determined by ascertaining the amount required to cure or to prevent the specific nutritional disorder. A liberal additional quota has then been allowed in order to fix the clinical optimum; gaged from this point of view, the requirement of vitamin A for man or, more particularly, for infants does not seem to be great. We²⁶ have discussed this aspect elsewhere and shown that small amounts of whole milk, and even of boiled milk, will cure xerophthalmia rapidly or dispel nightblindness. No case of xerophthalmia has ever been reported as developing on whole milk, given in moderate quantity. An experience of Spence⁹ is highly illuminating in this regard: "The first two cases were admitted to the hospital for this study, but it was found that although they were at first kept for a preliminary period on an experimental diet of skimmed milk, bread, margarine and jam, a rapid cure took place. It was apparently difficult to prevent a cure of xerophthalmia as soon as any alteration from their original diet was made, even though it was attempted to keep it free from vitamin A." Such is the factor of safety!

We do not believe that the average child requires any supplement of vitamin A above what it receives in 24 ounces (750 cc.) of milk. This opinion is partly based on the experience that supplements of vitamin A, whether in the form of carotene, haliver oil or cod liver oil, have brought about no benefit in growth, nutrition or immunity to infection. Our results cannot be attributed to an exceptionally high content of vitamin A in the dietary, as the milk in the institution is by no means of superior quality or high fat content. Nor is the interpretation relevant that our clinical results are so excellent that little improvement could be hoped for from an addition of vitamin A. On the contrary, as stated, respiratory infections were disturbingly frequent and pneumonia was a constant cause of worry.

Deficiency of vitamin A does occur when the dietary is anomalous; as the result of prolonged diarrhea, as in the Far East; as a complication of intestinal parasitism, as an accompaniment of chronic alcoholism, or associated with jaundice and other disturbances which retard intestinal absorption. As in the case of all vitamins, the demand is greatest during early childhood and probably again at puberty. But, as to a requirement of thousands of units of vitamin A daily, the unquestionable answer is that this constitutes therapeutic absurdity, which, happily, will prove to be only a passing fad.

CONCLUSIONS

Forty infants were given large amounts of carotene daily, forty were given large amounts of haliver oil and eighty no vitamin A supplement; all likewise received viosterol. In the course of an observational period of five months, frequent respiratory infections developed in all three groups, among those receiving vitamin A to the same extent as among the control group. Pneumonia and otitis media were not prevented. The blood in the carotene cases was saturated with the provitamin, as indicated by marked carotenemia. There is no

19. Moore, Thomas: Vitamin A Reserves of the Human Liver in Health and Disease with Special Reference to the Scope of the Vitamin as an Anti-Infective Agent, *Lancet* 2: 669 (Sept. 24) 1932.

20. Fox, F. W.: Some Investigations Into the Vitamin A Content of the Livers of Native Mine Laborers, *South African M. J.* 6: 689 (Nov. 12) 1932.

21. Vogt, E.: Vitamin Reserves of Female Organism, *München. med. Wehnschr.* 79: 1370 (Sept. 23) 1932.

22. Mendel, L. B.: Vitamin A, *J. A. M. A.* 98: 1981 (June 4) 1932.

23. Sheehy, E. J.: Minerals and Vitamins in Pig Feeding, *Nutrition Abstr. & Rev.* 2: 221, 1932.

24. Rice, J. B.; Mitchell, H. H., and Laible, R. J.: A Comparison of White and Yellow Corn for Growing and Fattening Swine and Brood Sows, *Bull.* 281, *Agri. Exper. Sta. Illinois*, December, 1926.

25. Hess, A. F.: Newer Aspects of Some Nutritional Disorders, *J. A. M. A.* 76: 693 (March 12) 1921.

26. Hess, A. F.: Diet, Nutrition and Infection, *Acta paediat.* 13: 206, 1932.

clinical basis for considering or designating vitamin A the "anti-infective vitamin."

The addition of cod liver oil to the dietary did not reduce the number of mild respiratory infections occurring during the summer months.

Infections of the skin, impetigo, developed in the vitamin groups quite as often as in the control group.

Inquiry throughout the United States disclosed that nightblindness, the most delicate index of deficiency of vitamin A in the adult, is a very rare disorder and has not increased during the past few years.

Our dietary is not deficient in vitamin A. A lack may come as the result of vagaries of diet or when absorption is defective; for example, in diarrhea or jaundice.

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MYOCARDOSIS—A SYNDROME

ITS RECOGNITION AND THERAPEUTIC MANAGEMENT

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DES MOINES, IOWA

The nosology or description of heart disease has varied and kept pace with the changing conceptions of the underlying physiologic and pathologic processes. The physician meets with two general varieties of heart disease. In the younger patients valvular disorders prevail, usually the result of previous attacks of endocarditis, and are diagnosed most readily by physical methods of examination. Heart disease of the middle and later decades is largely the result of wear and tear, with nutritive disturbances affecting principally the cardiac musculature and leading to degenerative changes and replacement fibrosis. In this type of heart disease the subjective history often tells the story, although here electrocardiography has become a valuable aid in diagnosis. Various clinical terms have been proposed for this degenerative type of cardiac disease. The older designation of chronic myocarditis is not expressive or properly related to the existing disease condition.

Myocarditis implies a background of inflammatory phenomena, the sequel of the acute infectious diseases of childhood, rheumatic and streptococcic infections, which more frequently attack the valvular endocardium but may also involve the myocardium. Diphtheria, typhoid and the influenzal group of infections are further etiologic factors. Cardiac disease in the prime of life and the later decades is quite a different process. Its etiology is indefinite and clinically has no manifest or clear-cut physical signs until the later or terminal stages. Some years ago Christian¹ proposed the name chronic nonvalvular heart disease, yet admitting at the time that it was not entirely satisfactory. In 1926, Riessman² applied the term myocardosis to this form of heart disease, and later Hyman and Parsonnet,³ in several comprehensive articles and a published volume, adopted this term as a generic designation signifying disease of the myocardium. In this discussion it is

proposed to apply the term myocardosis to that concurrence of symptoms which precede the advanced stage when anatomic changes permit a more definite and expressive clinical designation.

During the last twenty years, as the result of the contributions of Herrick,⁴ Pardee,⁵ Levine,⁶ Smith,⁷ Conner,⁸ Christian⁹ and other American clinicians, distinctive and characteristic clinical pictures have been developed for the several advanced or terminal stages of chronic degenerative heart disease.

Acute coronary thrombosis is now recognized as a distinct clinical entity, and its prompt diagnosis is of common occurrence. Chronic coronary artery disease or coronary sclerosis, likewise, permits of ready diagnosis. Electrocardiography has proved of particular diagnostic value in acute and chronic coronary occlusion. Angina pectoris and coronary disease may occur in manifold relationships. A purely neurogenic form of angina pectoris is recognized, but a large majority of the cases of angina pectoris present the signs or changes incident to involvement of the coronaries, both clinically and anatomically.

Chronic myocardial failure or insufficiency is associated to a greater or less degree with each of the preceding three forms of chronic heart disease. Its symptomatology is familiar and requires no repetition at this time. The clinical onset in these forms is often of striking suddenness, occurring in individuals previously in apparently good health. Yet in each condition it is safe to assume the existence of basic anatomic changes in the myocardium that have required a long period, probably years, to develop. It is this developmental period or stage that is encompassed by the myocardosis syndrome. This comprises a large group of patients coming to the attention of the general practitioner, the dispensary or outpatient clinic and in a large consulting practice.

It is unfortunate in some respects that heart diseases have become a highly specialized field of medicine and to some extent been taken out of general practice. Mackenzie¹⁰ always contended that the general practitioner, by reason of his first contact with cardiac cases and his familiarity with the habits and history of the patient, was able to detect the earliest signs of disease. The phenomena included in this syndrome are almost entirely subjective and have no definite sequence, yet considered concurrently they present a rather suggestive symptom complex of the early stages of myocardial disease. In a large measure these phenomena are expressive of a lowered myocardial reserve.

The need of a careful history is evident, and its completeness will depend on the art and ability of the examiner to draw out of the patient the essential subjective complaints. The history should include a careful investigation of previous infections, particularly such as could produce damage of the myocardium. Next, a familial tendency toward diseases of the circulation is important, and, lastly, a positive history of the various indiscretions of life which tend toward early vascular changes.

4. Herrick, J. B.: *Thrombosis of the Coronary Arteries*, J. A. M. A. 72: 387 (Feb. 8) 1919.

5. Pardee, H. E. B.: *An Electrocardiographic Sign of Coronary Artery Obstruction*, Arch. Int. Med. 26: 244 (Aug.) 1920.

6. Levine, S. A.: *Coronary Thrombosis*, Medicine 8: 245 (Sept.) 1929.

7. Smith, F. M.: *Ligation of Coronary Arteries with Electrocardiographic Study*, Arch. Int. Med. 22: 8 (July) 1918.

8. Conner, L. A., and Holt, E.: *Subsequent Course and Prognosis in Coronary Thrombosis*, Am. Heart J. 5: 705 (Aug.) 1930.

9. Christian, H. A.: *Cardiac Infarction (Coronary Thrombosis)*, Am. Heart J. 1: 129 (Dec.) 1925.

10. Mackenzie, James: *Symptoms and Their Interpretations*, New York, P. B. Hoeber, Inc., 1918.

Read before the Section on Practice of Medicine, at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. Christian, H. A.: *Chronic Nonvalvular Disease of the Heart*, J. A. M. A. 91: 549 (Aug. 25) 1928.

2. Riessman, David: *Myocardial Weakness: Diagnosis and Treatment*, M. Clin. North America 10: 261 (Sept.) 1926.

3. Hyman, A. S., and Parsonnet, A. E.: *Myocardosis*, J. A. M. A. 94: 1645 (May 24) 1930; *New England J. Med.* 204: 648 (March) 26) 1931; *J. M. Soc. New Jersey* 28: 831 (Nov.) 1931; *Failing Heart of Middle Life*, Philadelphia, F. A. Davis Company, 1932.

A proper estimate or interpretation of the patient's reaction to effort has further definite diagnostic value. Fatigability, tiredness, or cardiac fatigue is one of the early signs of myocardial weakness emphasized in the writings of Mackenzie, Riesman, Christian, Herrick, Hyman and Parsonnet. The patient expresses it as tiring or fatigue after the ordinary efforts or habits incident to his vocation and daily order of life. He states that he "is not as good as he used to be." Often there is added the element of fear or disinclination to perform the usual tasks. As the heart is a muscular organ continuously at work, fatigue should enter to some extent into its function. In the grueling contests of athletes, Mackenzie¹⁰ believed that the blood supply was insufficient to carry on the excessive muscular work.

It may be assumed that with early changes in the coronary circulation the efficiency of the heart muscle will be manifest by cardiac fatigue. Wiggers¹¹ states that functional reactions in disease differ from those in health only in degree. There are no pathologic processes in disease capable of evolving new types of functional reactions. According to Wiggers, fatigue is due to decreased muscular efficiency, and sensations of fatigue are direct criteria of an oxygen debt and of the accumulation of lactic acid. The more rapid development of fatigue in the heart patient is due to the lessened efficiency of the circulatory system in supplying the needs of the muscles at work, so that the oxygen debt is incurred with less amount of work and lactic acid accumulates more rapidly. The inability of the diseased heart to compensate this circulatory inefficiency is due to loss of myocardial reserve. Meakins and Long have shown that the oxygen debt of a cardiac condition is paid off more slowly, and the recovery period is longer. A trip to a warm or tropical climate is more fatiguing to a cardiac patient than to a normal individual. Insomnia, likewise, may be an expression of myocardial weakness.

The mimicry of gastric symptoms in advanced coronary disease is well known, and it is logical that to a lesser degree this occurs in connection with myocardial weakness. These are expressed under the guise of loss of appetite, gaseous distention and a feeling of pressure in the upper part of the abdomen, the chemical and roentgen manifestations being negative. Riesman¹² has referred to them as gastric masquerades and adds that apparent disease in the upper part of the abdomen often has its seat of origin in the heart.

These somewhat vague phenomena may accompany or usher in that triad of symptoms which Kauffman¹³ has termed the three steps to heart failure; viz., (a) breathlessness, (b) palpitation and (c) substernal discomfort.

Breathlessness is probably the most important feature of the myocardosis syndrome, but it again requires a fine distinction to determine whether this is a normal physiologic response or a pathologic manifestation. It is important to determine whether the change in functional response to certain effort tests such as climbing stairs, walking up a slight incline, and daily routine duties are phenomena that have not been noticed before. Often the return to the resting state will be longer and sometimes painful.

Long before the stage of circulatory failure is reached, the patient with heart disease differs apparently from normal persons only in the degree of muscular activity that brings on dyspnea and weakness. The normal individual is likewise not conscious of the vigorous normal movements of the heart, because he has become accustomed to them.

The signs of heart consciousness, as manifested by flutter, skipping beats, thumping and palpitations, occurring in middle life after a meal or physical effort, require careful evaluation. It is specially significant if they have not been noted previously. When associated with breathlessness and fatigue, it becomes an important part of the myocardosis syndrome.

The sensation of substernal discomfort is the one symptom that most frequently causes the patient to seek medical advice. Like the expression "heart consciousness," it is a sensation that is difficult for the average patient to describe. Some express it better than others. The sensations apparently may extend from a mere feeling of heaviness over the upper part of the chest to the terrible viselike constriction experienced in certain forms of angina pectoris. Herrick¹⁴ has referred to it as a mild type of angina. That it is invariably associated with physical effort still further confirms this relationship.

Substernal discomfort or distress, unlike breathlessness and palpitation, is rarely masked under any other guise. It is localized more frequently to the left than to the right of the upper part of the sternum, and radiation is uncommon.

Certain vasomotor disturbances are a part of the syndrome, such as vertigo, giddiness, syncope and occasionally convulsions. These occur often with simple postural changes—lacing a shoe, bending forward suddenly or other movements incident to the occupation of the patient. Again, such psychic phenomena are noted as mental haziness, impaired memory, stupor, drowsiness and hallucinations of sight, hearing and smell.

The following case illustrates some of these features:

Mr. B., aged 65, an attorney, in November, 1927, while in the court room suddenly became faint, dizzy and unconscious for thirty minutes, during which time a severe right sided convulsion developed. This was followed by paresis in the right arm and symptoms of aphasia, which cleared up in a few days. Several lighter attacks occurred during the next two weeks. While under hospital observation it was possible to differentiate the condition from cerebral tumor, epilepsy and cerebrospinal syphilis. A diagnosis of cardiovascular disease was regarded as most probable, yet there were few positive signs. In the succeeding period light fainting attacks occurred several times a year, usually under great mental strain. Lapses of memory were also noted. Within the past two years the patient has complained of anginoid chest pains with physical exertion. Several electrocardiograms, taken in 1932 and this year, are characteristic of coronary artery disease.

The sequence of clinical phenomena bears out the statement of Wiggers that the cerebral cortex is the most sensitive indicator of circulatory insufficiency.

Recent investigations have shown that the metabolism of the brain does not differ greatly from that of other tissues. The rate of lactic acid formation in the brain tissue appears to be higher than that of the body as a whole, and the normal blood flow per gram of brain substance is larger than that for skeletal muscle, heart, liver or spleen. It is not surprising, therefore, that cerebral activity should be seriously affected in con-

11. Wiggers, C. J.: Physiologic Meaning of Common Clinical Signs and Symptoms in Cardiovascular Disease, *J. A. M. A.* **96**: 603 (Feb. 21) 1931.

12. Riesman, David: Myocardial Disease and Gastric Masquerades, *J. A. M. A.* **91**: 1521 (Nov. 17) 1928.

13. Kauffman, R.: Ueber Probleme des Koronararterien Kreislaufs, *Wien. klin. Wchnschr.* **39**: 437 (April 15) 1926.

14. Herrick, J. B.: Angina Pectoris, *Northwest Med.* **24**: 360 (Aug.) 1925.

ditions of reduced myocardial reserve as well as in advanced stages of decompensation.

While the subjective phenomena constitute the essential part of the myocardosis syndrome, certain physical or objective signs have an important relation to it. They are also frequently significant of impaired myocardial reserve. An enlargement of the heart has been considered by Stroud,¹⁵ Christian¹⁶ and other observers as significant of beginning myocardial weakness and indicating a diminution of myocardial reserve. The determination of the extent of enlargement of the heart is one of the most important single procedures in cardiac diagnosis.

While the tendency is to a most complete use of the x-ray in examination of the gastro-intestinal tract, it receives much less consideration in cardiac disease, although it is of equal importance. By means of the fluoroscope, orthodiascope, six foot roentgenograms and signs of either right or left ventricular preponderance in the electrocardiogram, definite evidence is presented of the degree of cardiac enlargement. In contrast to this, it should be noted that occasionally in extensive coronary artery disease little if any cardiac enlargement is present. The value of blood pressure changes as the result of physical exertion has been variously interpreted. No satisfactory exercise test has yet been devised. An elevation of 20 mm. of mercury after one of the customary exercise tests is regarded as a sign of myocardial weakness. A change in the pulse rate after exertion is also regarded as having some diagnostic significance. When the pulse rate requires longer than five minutes to return to the resting figure, it suggests an impairment of myocardial reserve.

Of more importance is the cardiorespiratory test, to represent graphically the measured heart load, introduced a few years ago by Dr. Harold M. Frost¹⁷ of the medical department of the New England Mutual Life Insurance Company. The apparatus used consists of two elements: a vacuum-pressure Tycos gage and a Simplex spirometer. The test consists of a series of steps, with a brief interval of ten seconds after each one, during which the systolic pressure is recorded, forming the so-called base line. A condition of increased intrathoracic pressure is produced by a full inspiration, which causes an initial short rise followed by a drop of 20 mm. of pressure. A full expiration then produces a condition of decreased intrathoracic pressure, followed by an initial decline of systolic pressure, and then a gradual rise of from 5 to 10 mm. above the original level. In the next step the subject blows against the gage, maintaining a positive pressure of 40 mm. of mercury for ten seconds, after which a negative pressure of 25 mm. of mercury is maintained by inhaling against the gage. In the final step the subject takes a deep inspiration and then exhales by blowing as long as possible through a spirometer, maintaining a positive pressure of 20 mm. of mercury throughout the expiration. In the normal person the systolic pressure continues to rise from 20 to 50 mm. above the original level. In conditions of myocardial weakness or lowered myocardial reserve, the final rise is limited to 10 or 20 mm., or the rise cannot be maintained and a marked drop may occur toward the close of the expiratory act.

This test is extensively used by the examiners of this insurance company, and it was through the courtesy of

the local examiner, Dr. D. J. Glomset, that I was permitted to judge of its value in a rather large series of observations. In clinics and large medical services in which spirometer tests for vital capacity are a routine practice, information has been collected indicating that it has definite objective value. Soma Weiss¹⁸ states that an early reduction of vital capacity of the lungs is an early sign of circulatory insufficiency.

The reports of recent observations on venous pressure indicate that it has a significant relation to the dynamics of the failing heart. Eyster¹⁹ reaches the conclusion that venous pressure is clinically an index of cardiac function and that its clinical significance is largely confined to the one condition of impending or present cardiac incompetence. Venous pressure in cardiac insufficiency varies from the upper normal level to 300 mm. of water or more. The extent of the failure is roughly proportional to the rise, and the clinical progress of the patient and the prognosis of the condition are largely revealed by the trend of venous pressure. Frequently a change in venous pressure precedes other clinical signs. Cardiac incompetence has been described as that condition in which the venous pressure exceeds the range within which the heart is capable of responding by increased work to an increased venous load.

ELECTROCARDIOGRAPHY

The electrocardiograms in the early stages of myocardial disease have thus far not been regarded as of especial significance. Signs of conduction disturbance and changes in the ventricular complex are most likely. Left axis deviation is found so frequently in middle and advanced age periods that many observers regard such a sign as normal; yet, on the other hand, interesting studies have been reported by Luten and Grove,²⁰ and more recently by Hyman and Parsonnet,²¹ that are very suggestive. In observing the development of bundle branch block from the beginning, they noted that the cases showing early left axial deviation with altered T waves in the first lead later developed into full blown bundle branch block. As more frequent and serial electrocardiographic studies are made, particularly as additional leads will clear up the silent areas, it is reasonable to expect that early changes will be noted of diagnostic value.

A series of subjective and objective signs are included under the generic term of myocardosis syndrome. Considered separately, each phenomenon is not diagnostic, but taken concurrently they form a clinical picture that permits of ready recognition. It is mainly expressive of the myocardial reserve of the heart, which is an important factor in the complicated mechanism of the circulation. The syndrome likewise is suggestive of early anatomic changes in the myocardium. In that respect it opens up a field of fruitful investigation and, furthermore, offers the most alluring prospect in the study of the various phases and stages of coronary disease now beyond our ken.

THERAPEUTIC MANAGEMENT

The recognition of the myocardosis syndrome entails a considerable responsibility on the attending physician. The public has a greater fear of heart disease than of

15. Stroud, W. D.: Estimating Myocardial Reserve, *Am. Heart J.* 1:354 (Feb.) 1926.

16. Christian, H. A.: Chronic Myocardial Insufficiency, *Ann. Int. Med.* 5:393 (Aug.) 1931.

17. Frost, H. M.: Publication New England Mutual Life Insurance Company, 1926, p. 136.

18. Weiss, Soma: Circulatory Adjustments in Heart Disease, *Ann. Int. Med.* 5:100 (Aug.) 1931.

19. Eyster, J. A. E.: Venous Pressure, *J. A. M. A.* 97:1269 (Oct. 31) 1931.

20. Luten, D., and Grove E.: Bundle Branch Block, *Am. Heart J.* 4:431 (April) 1929.

21. Hyman, A. S., and Parsonnet, A. E.: Bundle Branch Block, *Arch. Int. Med.* 45:868 (June) 1930.

any other disease except cancer or perhaps syphilis. As Herrick²² says, it is easy to sow the seed of fear of heart disease. Phobias may be started and neurotic individuals made more neurotic, with a consequent lessening of their activities and happiness. Yet the fullest cooperation of the patient is needed if during this period any attempt is to be made to curb or combat the relentless progression of the vascular degenerative changes in the heart peculiar to the middle and later decades of life. It is of primal importance that the patient accept the view that the aging process is a physiologic change and does not permit the same activities as in younger years. When the condition clearly indicates an encroachment on the normal myocardial reserve, rest should be the main essential in outlining a proper regimen of living.

Many false notions prevail as to the value of certain prescribed athletic or physical culture exercises intended to keep a person "fit and in trim." In myocardial fatigue they may be distinctly harmful. To sit in an office chair or to be confined to a drugstore most of the year and then go on a brief vacation consisting often of a strenuous hunting trip has brought many a heart to a standstill. Experience makes it wiser to play only nine holes of golf instead of the full course. In prescribing exercise for a patient of this type, the length of the rest period to follow is as important a consideration as the degree of exercise itself. Direction as to change in the usual mode of living may be necessary and, particularly, a curtailment of the many social, civic and public responsibilities that form so much of the "goat feathers" collected by the public spirited men and women of our day.

Special care must be given to general disorders as potential and active diabetes, the anemias, functional digestive disorders and obesity. The removal of infective foci such as dental abscesses, diseased tonsils, sinusitis and hemorrhoids is to be considered.

Periodic examinations and encouraging conferences with the patient are an important part of the management.

The proper appreciation of the myocardosis syndrome offers the one hope to modify and possibly control the tendency to progressive and more serious myocardial damage, and, above all, it opens up a new field in preventive medicine that is worthy of our best efforts.

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ABSTRACT OF DISCUSSION

DR. R. I. RIZER, Minneapolis: The point Dr. Bierring makes of the early recognition of myocardosis opens a large field in preventive medicine. Often an individual about to take up some important work or to go on a journey wishes to know his exact physical status. Beside the clinical observations and the procedure Dr. Bierring has brought out, my associates and I are trying the roentgenologic method of Eyster and the iodide method of Starr to determine cardiac function. From the results to date I believe we are going to be more able to tell the patients just what they may expect and to what extent they will have to curtail their activities, if at all. Dr. Bierring speaks of the sensations of fatigue as a direct criterion of oxygen deficit and of accumulation of lactic acid. In 1928 I made a report of work I had been doing with oxygen in cases of pain in coronary occlusion. After administering oxygen to patients with coronary occlusion who were suffering extreme pain and after having obtained relief for all of them, I have

come to the conclusion that the pain is due to anoxemia of the heart muscle. In this series there were three who developed pain following the relief from the primary pain. They showed a fading pulse and a peculiar electrocardiogram. These three died, and the autopsies confirmed the diagnosis of rupture of the heart muscle. Lactic acid is one of the results of anoxemia, and in the series of experiments I have not found that lactic acid produced symptoms in the heart muscle or in the peripheral system. I have found that acute respiratory infections have been the precipitating cause of coronary occlusions.

DR. CADIS PHIPPS, Boston: There is the question as to the relationship of previous (youthful) myocardial degeneration to myocardosis. In going over some 600 autopsies at the Boston City Hospital I found that rheumatic heart disease was present in not over 10 per cent of the cases of myocardosis and in these it seemed coincident rather than causative. Apparently myocardosis is secondary to arterial degeneration in at least 90 per cent of the cases. Dr. Bierring spoke of blood pressure in the diagnosis. With a Pachon oscillogram it has seemed that the so-called dynamic mean pressure of Marey was of importance. Excluding all cases of hypertension, I feel that a persistently elevated mean pressure in the presence of normal diastolic and systolic pressures is indicative of cardiac degeneration. In respect to the treatment, rest is of great importance, but as I recall an early monograph, the term "professorial disease" was used, suggesting its association with a sedentary life. All are familiar with the cardiac exercises of Oertels and Herz, based on gradual or accustomed exertion, and this seems exemplified in my experience with cardiac cases examined impartially for the Massachusetts Industrial Accident Board. I was impressed by the fact that workmen who were obliged to continue with their work for financial reasons obviously had not only a better expectancy of life but also a better cardiac function when compared with a similar group of so-called private cardiac patients. It seems that exercise, to some extent, has its value. I will not discuss the routine use of digitalis for myocardosis other than to mention an excellent editorial recently in THE JOURNAL, which, however, did not include the work of Gilbert and Fenn, who showed the possibility of digitalis producing coronary spasm, particularly in hearts already diseased. I believe the treatment is largely that of intercurrent illnesses. In respiratory diseases the mechanical as well as the toxic side must be considered, as is also done in gastro-intestinal disturbances, with their possibility of causing splanchnic engorgement and a resulting cardiac anoxemia. Rapid dehydration with increased coagulability of the blood may precipitate cardiac failure. In general, the treatment of myocardosis must be looked on as the treatment of arthritis is; namely, care of the entire body rather than of one organ or system.

DR. WALTER L. BIERRING, Des Moines, Iowa: My main object in this paper was to bring into direct contrast that period which precedes the anatomic changes, recognized in the clinical expressions of acute or chronic coronary occlusions, certain forms of angina pectoris and chronic myocardial insufficiency. A further purpose was to direct attention to this preceding period and to determine whether, by following the teachings of Mackenzie, a failing or weakened heart might not be recognized earlier than at present. This offers the most fruitful source of investigation, first, in determining the earlier phases of coronary disease, and secondly, in opening up a new field in preventive medicine. Rest is very essential, but, as stated in the discussion, there can be too much rest. The heart as a muscular organ must be kept active. Therefore, some regulated form of work is more beneficial than complete rest. A modification of the patient's habits and activities is important, particularly the relief from the various civic and social duties required of public-spirited men and women of our day. Digitalis has a definite place in the treatment of enlargement of the heart, indicating, as it frequently does, an early stage of myocardial failure. Myocardosis is a generic term and most expressive of the early subjective symptoms, being indicative of lowered myocardial reserve or lowered circulatory efficiency. Its recognition constitutes the best hope of arresting or, to some extent, relieving the cardiac degenerative changes which are more or less physiologic in the middle and later decades of life.

22. Herrick, J. B.: Common Errors in Treatment of Heart Disease, J. M. A. Georgia 20: 335 (Sept.), 1931.

ACUTE DISSEMINATED ENCEPHALOMYELITIS

ITS CLINICAL MANIFESTATIONS AND SEQUELAE

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Probably nothing in contemporaneous neurology offers as many nosologic difficulties as the acute focus-producing diseases of the brain and spinal cord. There is much overlapping of symptomatology, and the pathologists do not agree on a satisfactory morphologic delineation. The bacteriology of many of these disorders is an unwritten chapter. It would appear from a study of such reports as those of Redlich,¹ and of Flatau,² which include a larger number of cases, that such conditions as myeloradiculitis,³ polyradiculoneuritis,⁴ acute benign infectious myelitis⁵ and possibly neuromyelitis optica aigue or ophthalmoneuromyelitis can safely be interpreted as subsyndromes within the protean manifestations of acute disseminated encephalomyelitis. Those who would keep out of the maze of recent controversies would do well to review the conservative and comprehensive discussion by Oppenheim⁶ in his textbook.

TABLE 1.—Analysis of Twenty-Eight Cases of Acute Disseminated Encephalomyelitis

Case	Sex	Age	Date of Onset	Respiratory Infection	Latent Period (Period of Invasion)	Development of Neurologic Signs
1	M	34	June, 1922	No	.....	.....
2	M	37	June, 1925	No	.....	3-4 days
3	M	25	Oct., 1929	Yes	A few days	A few days
4	F	35	March, 1931	Yes	12 days	3 days
5	M	36	Aug., 1931	No	.....	.....
6	F	30	Dec., 1931	No	.....	15-18 days
7	M	50	Jan., 1932	No	.....	A few days
8	F	23	Feb., 1932	No	.....	6 weeks
9	M	37	March, 1932	No	.....	4 weeks
10	M	13	April, 1932	Yes	5 days	7 days
11	F	27	May, 1932	No	4 days	A few days
Herpes labialis						
12	F	41	May, 1932	Yes	4 days	2-3 weeks
13	F	44	July, 1932	No	.....	5 days
14	F	34	July, 1932	No	.....	1 week
Herpes labialis						
15	F	24	Aug., 1932	Yes	5-7 days	3 days
16	F	53	Oct., 1932	No	.....	2 days
17	M	33	Nov., 1932	Yes	14 days	3-4 days
18	M	34	Dec., 1932	Yes	9 days	4 days
19	M	9	Dec., 1932	Yes	21 days	7 days
20	F	13	Jan., 1933	Yes	14 days	3 days
21	F	63	Jan., 1933	No	.....	8 days
22	F	37	Jan., 1933	Yes	5 days	21 days
23	F	47	Jan., 1933	Yes	14 days	3 days
24	M	14	Feb., 1933	Yes	14 days	2 days
25	F	12	Feb., 1933	Yes	18 days	3 days
26	M	49	Feb., 1933	No	.....	14-21 days
27	M	33	Feb., 1933	Yes	Unknown	Unknown
28	M	61	March, 1933	Yes	24 days	7 days

The twenty-eight cases reviewed in this series have been approached with this broad concept in mind. Post-

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1. Redlich, E.: Ueber ein gehäuftes Auftreten von Krankheitsfällen alomylitis Disseminata, Monatschr. f. 1927.
"inflammation disséminée du système e 1928 et sur ses rapports avec s du système nerveux au cours de s cas pigue de sclérose en plaques, 2.
A. M.: Myeloradiculitis, Arch. Neurol. & Psychiat. 23: 240 (Feb.) 1930.
4. François, Zuccoli and Montus: Sur en cas de polyradiculo-neuritic erable avec disassociation albino-cytologique, Rev. neurol. 36: 95 (Jan.) 1929.
5. Sands, I. J.: Acute Benign Infectious Myelitis, J. A. M. A. 96: 23 (Jan. 3) 1931.
6. Oppenheim, H.: Textbook of Nervous Disease, ed. 5, translated by Alexander Bruce, London, T. N. Foulis, 1911.

exanthematous and postvaccinal encephalomyelidites have been excluded from consideration because of the etiologic controversies involved. Infection of the upper respiratory tract was a prominent feature in the histories of these patients, preceding the onset of neural manifestations in 5 per cent of the series. This illness ranged from a mild coryza to a severe influenza-like condition, in one instance complicated by bronchopneumonia. The latent period between the onset of the respiratory infection and the development of neurologic symptoms and signs varied from four to twenty-four

TABLE 2.—Symptoms and Signs of Acute Disseminated Encephalomyelitis: An Analysis of Twenty-Eight Cases

Sensory manifestations.....	26
Pains in legs.....	11
Pains in other parts of body.....	11
.....	9
.....	2
.....	1
.....	7
.....	9
.....	2
Astereognosis.....	6
Motor disturbances.....	24
Weakness, subjective.....	24
Paralysis or paresis of extremities.....	24
Spastic.....	12
Flaccid becoming spastic.....	6
Flaccid with recovery.....	6
Disturbance of sphincter control.....	12
Cranial nerve involvement.....	16
II.....	3
III.....	2
V.....	4
VI.....	7
VII.....	8
Facial diplegia.....	9
VIII.....	4
IX and X.....	7
XII.....	4
Encephalitic signs	
Headache.....	9
Nausea.....	7
Vomiting.....	3
Kernig's.....	2
Rigid neck.....	5
Opisthotonos.....	1
Photophobia.....	2
Pleocytosis in spinal fluid (17 cases examined).....	8
Diplopia.....	10
Nystagmus.....	6
Blurred vision.....	2
Insomnia.....	6
Drowsiness.....	5
Stupor.....	10
Depressed.....	1
Confused.....	3
Irrational, delirious.....	2
Maniacal.....	4
Receptive aphasia.....	3
Memory defect.....	3

days, in most cases ranging from five to fourteen days. This was regarded as the period of invasion of the nervous system analogous to the preparalytic stage of anterior poliomyelitis.

By far the most consistent features of the early stage of encephalomyelitis are sensory derangements and muscular weakness. Shooting pains in the back, radiating along the course of the sciatic nerves, frequently apprised the patient of the onset of involvement of the nerve. An attempt to produce Lasègue's sign was often painful, and sciatica was commonly the first clinical diagnosis. In other cases dysesthesias, such as tingling, numbness and pin-and-needle sensations, accompanied by a severe muscular weakness or rapidly developing paralysis, ushered in the acute phase. In a smaller group delirium, headache and drowsiness, or a confused and depressed or stuporous mental state, dominated the active phase of the disease. The neurologic manifestations in the majority of cases reached a maximum intensity in less than a week. In a few cases the onset

was more insidious, with new symptoms appearing over a period of several weeks.

Examination frequently revealed objective sensory disturbances such as (1) a hypo-esthesia for all qualities of sensation of a peripheral neuritic distribution, (2) diminution or absence of all forms of sensation below a definite segmental level with or without girdle pains or bands of hyperesthesia, (3) impairment of muscle, tendon and joint sense manifested by ataxia and astereognosis or (4) bizarre admixtures of these types.

The motor phenomena in the active phase were equally diversified. As previously indicated, muscular weakness occurred in over 90 per cent of the cases. A spastic or a flaccid paralysis or paresis was encountered with equal frequency at the first examination. In many

Three patients presented a facial diplegia, a symptom not frequently referred to in the literature, although François, Zuccoli and Montus reported a case, and Wilson and Robertson⁷ reported three cases associated with an extensive polyneuritis. Mild auditory impairment was occasionally encountered, but deafness was not an outstanding symptom. Almost one third of the patients in this series had some difficulty in talking, swallowing, coughing and expectorating, showing signs of involvement of the glossopharyngeal, vagus and hypoglossal nerves. Two of the three deaths in this series can be attributed to bulbar palsy, and one woman without premonitory cranial nerve symptoms died with a heart block, which may or may not have been of medullary origin.

At times diencephalic features, such as drowsiness, disturbance of the sleep rhythm and clouding of the sensorium, accompanying diplopia and palsies of the cranial nerves, produced a clinical picture resembling epidemic encephalitis. Occasionally mental conditions overshadowed or dominated all other symptoms. These mental states varied from insidious psychoneuroses and mild depressions or manic excitements, to confused, irrational and delirious states suggesting a wet brain. A receptive aphasia was occasionally seen. Emotional lability with a mild depression punctuated by short confusional states most commonly characterized the course of the illness during the active phase and sometimes continued into the convalescence. In no instance was the peculiar euphoria sclerotica so characteristic of multiple sclerosis encountered.

Clinical signs of meningeal irritation of mild degree were not infrequently seen, but rarely was there an actual clinical meningitis. A mild lymphocytic pleocytosis in the spinal fluid was seen in about one half of the patients examined during the acute stage. None of these patients showed a hemorrhagic or xanthochromic spinal fluid, such as was seen by McIntyre⁸ in a recent epidemic of an unusual encephalopathy. The protein content was usually moderately increased, and the colloidal reaction was either a low parenchymatous (syphilitic zone) curve, or entirely flat. An albuminocytologic dissociation in the spinal fluid was frequently but not invariably seen. Two patients with the clinical syndrome of a transverse myelitis showed positive manometric and roentgen evidence of an incomplete spinal subarachnoid block, and were thus similar to the seventh patient of Strauss and Rabiner.

REPORT OF CASES

CASE 1.—*Peripheral polyneuritic type; following severe coryza, rapid onset of symptoms referable to the sciatic nerves; bilateral peripheral facial palsy; little evidence of involvement of the central nervous system; recovery in two or three months.*

History.—A. M., aged 33, who had been in excellent health, developed a severe cold about Oct. 30, 1932, which left a residue of malaise. Two weeks later he noticed a sensation of numbness in his feet, and shortly after that shooting pains in his legs. The next day he noted a lack of feeling in the urethra on urination and an incontinence of feces. On the third day the numbness had extended up his legs, which became so weak that he was unable to control them, and he had to be transported home from work. Lasègue's sign was positive, and the family doctor made a diagnosis of sciatica. The next day Bell's palsy was observed on the left side; twenty-four hours later, the right facial nerve was similarly involved.

7. Wilson, G., and Robertson, H. F.: Facial Diplegia in Polyneuritis, *Am. J. M. Sc.* 153: 680 (May) 1932.
8. McIntyre, H. D.: An Unusual Encephalopathy, Probably Infectious in Origin, *J. A. M. A.* 100: 1097 (April 8) 1933.

TABLE 3.—Study of the Spinal Fluid

Case	Time After Onset of Symptoms	Cells	Globulin	Mastic	Sugar Mg. per 100 Cc.	Chlorides, Mg. per 100 Cc.
2	5 yrs.	2	0	0000000000	....	...
5	.....	Normal	Positive	5543210000	....	...
7	5 mos.	5	+++	2332100000	....	...
	6 mos.	..	0	0000000000	....	...
8	2 mos.	20	+	3221000000	....	...
			++	3211000000	....	...
9	1 yr.	3	++++	444310000	61.0	638
10	1 wk.	Normal	++	2343210000	....	...
12	1 mo.	24 hrs.	+	2100000000	..	...
13	1 wk.	10	++	0000000000	....	...
14	1 wk.	32	0	0000000000	....	...
15	3 days	Normal	0	.....	....	...
16	11 days	8	+	0000000000	....	...
	14 days	0	++++	1222100000	....	...
17	2 wks.	41	+++	3331110000	....	...
18	3 days	2	++++	0000000000	....	...
	7 days	6	++++	.....	....	...
	9 days	4	++++	2332100000	....	...
	15 days	4	++++	.....	66.2	636
20	3 days	14	Negative	.....	...	...
	9 days	12	++	3443210000	76.0	722
21	5 days	35	++	2543221100	....	...
23	30 days	19	+	.....	....	...
	32 days	10	+	.....	....	...
	35 days	13	.....	.....	....	...
24	3 wks.	2	++	1100000000	57.8	643
25	3 days	1	0	.....	....	...
	11 days	6	++	.....	....	...
26	8 wks.	3	++++	3210000000	....	...
	13 wks.	6	++++	4421000000	68.5	700
27	3 wks.	15	0	00000000	....	...
28	14 days	51	Positive	.....	....	...

the tendon reflexes, abolished during the early course of the disease, probably because of the ictus-like onset, later became hyperactive; in others, this atony persisted and slowly improved, and was regarded as evidence of anterior horn cell or of neuritic involvement.

In most cases, in addition to these sensory and motor derangements of the spinal cord, there was some focal involvement of the cranial nerves. Blurred vision, spots before the eyes and a painful eyeball were isolated subjective complaints. Examination of the eyegrounds usually revealed nothing more than slight hyperemia and haziness of the disk margins; in three cases a definite optic neuritis was seen. Symptoms and signs of involvement of the trigeminal nerve were uncommon, but hyperesthesia, numbness, sluggish corneal reflexes and motor weakness were found in a few instances. Diplopia was one of the most common subjective symptoms, and was usually explained by a demonstrable palsy of the abducens nerve. The most common lesion of the cranial nerves was an incomplete facial paralysis.

Examination.—The only abnormal signs aside from those of the neuromuscular system were swollen, hyperemic tonsils with follicular exudation. There was weakness of the left lateral rectus muscle, lateral nystagmus and bilateral Bell's palsy. The patient talked as if his mouth were full of food. Hearing was definitely diminished on the left side. The upper extremities were moderately paretic; reflexes were weak but preserved, and there were no sensory defects. In the lower extremities there was a severe loss of muscle power; tendon reflexes were absent, and there was an impairment of touch and pressure sense. Pain sense was markedly impaired over the first sacral dermatome on both sides, and the first and second lumbar segments on the right. Abdominal, cremasteric and plantar reflexes were abolished. There was marked impairment of muscle, tendon and joint sense and marked astereognosis. Lasègue's sign was positive.

Laboratory Data.—The spinal fluid contained 41 cells. The Pandy test was 4; the colloidal mastic curve, 333110000 and the Wassermann reaction, negative.

Course.—The patient slowly improved, and two months later the only residual manifestations were absent achilles reflexes; paresthesia over the soles and the hands; slight pain on stretching the sciatic nerves, and some weakness of the upper extremities. He is now subjectively and objectively completely recovered.

CASE 2.—Transverse myelitic type; rapid onset of thoracic transcord lesion; peripheral neuritic involvement of hands; incomplete subarachnoid block; transitory Argyll Robertson pupils during convalescence; residue of ataxia, spasticity, neuralgic pains and cerebellar ataxia.

History.—J. S., aged 37, had been in good health until March 20, 1932, when he noticed that his right foot began to feel cold. When he soaked his feet in hot water, his left foot felt warm, but not his right. One morning three weeks later he was unable to arise from bed. His legs and abdomen felt numb, and he could not move his lower limbs. He suffered a superficial burn over his right hip while sitting too close to a heater. He had severe obstipation and urinary retention.

Examination.—There was paralysis of both legs with hyperactive tendon reflexes, a right ankle clonus and a weak Babinski sign on the left. The cremasteric and abdominal reflexes were abolished. There was marked hypesthesia for brush and pin-prick, and thermanesthesia below the fourth thoracic segment bilaterally. Vibratory sensation was abolished over the pelvis and lower extremities. The patient had greatly diminished power in both hands. He had hypesthesia for brush and pin-prick over both hands and wrists. Manometric studies of the spinal fluid revealed an incomplete subarachnoid block which was localized by iodized poppy seed oil 40 per cent at the eighth thoracic segment.

Course.—The patient improved rapidly, and one month later retained only slight hypesthesia to heat and cold in the left ankle and to pin-prick and brush in the left hand. The abdominal reflexes were now obtained on the left, but not on the right side. The tendon reflexes in the lower extremities were slightly hyperactive and the plantar responses weakly extensor. The patient walked with a slight ataxia. His power of grip had more than doubled. He had no urinary or rectal disturbances.

He was discharged from the hospital on May 24, but returned to the outpatient department, June 30, complaining of neuralgic pains in his arms and back, accompanied by some rigidity of his lower extremities. Bilateral Argyll Robertson pupils were noted. These had disappeared by October 4, but neuralgic pains had appeared in the left intercostal region and the left leg.

After eleven months he still complained of pains in the trunk and legs. Hypesthesia to tactile and painful stimuli was found over the fingers and the feet and legs, of peripheral neuritic distribution. There was marked hypertonus of the legs with a Babinski sign on the right. The abdominal and left cremasteric reflexes were absent. The patient showed a motor weakness and an awkwardness for fine movements of both arms and legs, the right side being more severely affected. There was a suggestive Romberg sign.

At present, a cerebellar gait with increased ataxia, a positive Romberg sign, marked intention tremor and adiadiokinesis are residual features.

CASE 3.—Bulbar type; following mild paresthesias of the hands for from four to six weeks, a myeloradicular syndrome accompanied by a fulminating and rapidly fatal bulbar palsy.

History.—Mrs. M. H., aged 63, became acutely ill with severe pain of a constant, pushing nature below the tip of the right scapula. In retrospect, she described glove-like paresthesias of the hands for the past six weeks. Four days after the onset of acute symptoms, she became so weak that she was unable to stand, and had marked impairment of speech. She also had urinary retention and obstipation.

Examination.—She had both lateral and vertical nystagmus, bilateral paresis of the motor division of the trigeminal nerve, bilateral incomplete peripheral facial palsy, an absent gag reflex and feeble elevation of the soft palate. Speech was bulbar in type and barely intelligible. All superficial and tendon reflexes, including the plantar, were entirely abolished. There was hypesthesia for painful stimuli below the third thoracic segment on the right and the fifth on the left. Discriminatory sense was diminished below the right clavicle and on the left over approximately the second to the sixth thoracic segments, and below the knee. There was a severe impairment of muscle, tendon and joint sense, with marked ataxia of both hands and legs and astereognosis.

Laboratory Data.—The spinal fluid cell count was 35; the pressure, 18 mm. of mercury; the Pandy test, 2; the colloidal mastic curve, 2543221100; the Queckenstedt test, negative, and the Wassermann reactions of the blood and spinal fluid, negative.

Course.—The patient became progressively worse with death on the tenth day of acute illness from bulbar palsy with a terminal pneumonia. Permission for autopsy was refused.

CASE 4.—Encephalitic type; following generalized pains in the extremities and herpes labialis, a rapidly developing stuporous state resembling epidemic encephalitis; recovery from cerebral manifestations with a residue of posterolateral involvement of the spinal cord.

History.—M. M., aged 34, with an uneventful past history, except for a migratory rheumatism five years previously, became ill with vague prodromal symptoms on July 14, 1932. The next day she could not get out of bed. She had generalized pains in the feet, legs and arms, and occasionally a sensation of numbness in the fingers. Her ankles felt "as if they were broken." These pains were subjectively different from arthritis. She had a high fever, and her mental state became progressively dull, reaching a profound stupor with short subdelirious intervals when admitted to the City Hospital one week later.

Examination.—The patient was in a semicomatose condition with a temperature of 40 C. (104 F.). The pupils were dilated, the left more so than the right, and the pupillary reactions were sluggish. Examination of the eyegrounds showed hyperemia, but no actual papilledema. A marked photophobia was present. There was severe herpes labialis. The throat was septic. There was no nuchal rigidity. The lungs were clear. A systolic murmur was heard over the apex of the heart. There were a few herpetic lesions on both thighs. The Kernig signs were negative. There were no paralyses or objective sensory abnormalities. Abdominal reflexes were absent. There was an absent patellar reflex and a suggestive Oppenheim sign on the left side.

Laboratory Data.—The spinal fluid contained 32 cells. The Pandy test reaction was negative and the colloidal mastic curve, flat. The Wassermann reaction of the blood and spinal fluid was negative. There was febrile albuminuria.

Course.—The patient was incontinent, did not talk and had difficulty in swallowing. Her temperature became normal in a week, and her stuporous and subdelirious state rapidly improved. She was discharged from the hospital on Aug. 8, 1932, mentally clear, but with an ataxic gait. She had occasional pains in her feet and difficulty in walking, but improved steadily.

When reexamined nine months later she showed a marked weakness of all extremities. Her gait was slightly spastic and very unsteady. The tendon reflexes were somewhat hyperactive. The abdominal reflexes were weak, and there was a weak Babinski sign on the right. Vibratory sensation was impaired in the legs, and proprioceptive sensation was somewhat impaired. There was a marked acro-apraxia. There were no parkinsonian features.

COMMENT

The residual symptoms and sequelae of acute disseminated encephalomyelitis have received scant attention in the literature. McAlpine⁹ discussed the persistence of a Brown-Séquard syndrome and of symptoms in themselves indistinguishable from those of multiple sclerosis. The relapsing character of some cases was noted by Redlich, who considered it the exception, rather than the rule. Grinker and Bassoe¹⁰ demonstrated that remissive and relapsing features occur clinically, and are explained anatomically by an extension of the old lesions at their periphery but no multiplicity of fresh lesions. The cases cited, and the following cases, in all of which the diagnosis of acute disseminated encephalomyelitis seems extremely probable, demonstrate that a residue of spasticity, ataxia and muscular weakness is very common. Peripheral neuritic sensory impairment and neuralgic pains and the progression of symptoms in the chronic stage suggest that the causative agent of this disease, as that of epidemic encephalitis, is present and active in the nervous system beyond the period of the acute symptoms.

TABLE 4.—Present Status of Twenty-Eight Patients with Acute Disseminated Encephalomyelitis

Recovered.....	10
Convalescing.....	3
Showing residual features.....	6
Relapse.....	5
Dead.....	2
Unknown.....	1

One patient with an acute illness in 1927, characterized by shooting pains and paresthesia of the lower extremities, blurred vision and severe bulbar palsy, improved gradually for about two years, but became mildly spastic. During the past four years his condition has not appreciably changed. Examination in July, 1932, showed weakness and spasticity of all extremities, with hyperactive tendon reflexes, except that the left achilles reflex was absent and the right, very sluggish. The abdominal and cremasteric reflexes were preserved. There was atrophy of the small muscles of the feet. Fine fibrillary twitching was observed in the muscles of the shoulder-girdle and of the thigh. There was hypesthesia for pin-prick over the feet and ankles, and a loss of vibratory sensation in the lower extremities. There was a rest tremor of the right hand. The spinal fluid was normal.

A recent examination showed increased muscular atrophy in the lower extremities, with diminished patellar reflexes and loss of cremasteric and lower abdominal reflexes. An attempt to produce Lasègue's sign was painful. The patient complained of cramplike pains in his legs, involuntary contractions of his hamstring muscles and severe, needle-like paresthesias in the soles.

Another patient with the acute phase in 1929 has improved steadily. His residue is atrophy of the muscles of the anterior abdominal wall which compels him to raise himself from the lying to the sitting position by the use of his hands, hyperesthesia over the common peroneal nerve area and a "slapping" of the right foot when walking.

A third patient had an acute phase in February, 1932, characterized by a rapidly developing transverse

myelitic syndrome at about the ninth thoracic segment, paralysis of voluntary movements of the right hand, paresthesias in the soles, an aching pain in the right forearm and involvement of the left abducens and facial nerves but of the right hypoglossal nerve. She began to improve in May, and by September was symptom-free except for a slight ataxia, and had resumed housework. Eleven months after the acute onset, she noticed a rapidly progressive loss of vision in the right eye. The left became similarly involved two months later, and this was accompanied by an increased ataxia which made her unable to stand. She had burning sensations in her legs. Examination on March 10, 1933, showed hyperactive, pendulous tendon reflexes and muscular hypotonia, marked impairment of muscle and vibratory sense and astereognosis, all more pronounced on the right side. She had a swelling of the left optic disk with loss of direct and consensual light reflexes and loss of accommodation, together with almost total blindness. The right disk was very pale, and the visual fields were constricted to the macular area. She was given intravenous typhoid vaccine and improved rapidly. The left visual field is now normal and the right slightly reduced in its temporal aspect. Pupillary reactions have returned to normal. Muscle, tendon and joint sense was much improved, and she was able to walk fairly well, but still with an ataxic gait. Muscle strength was improved.

The similarity of the clinical picture in the convalescent or residual stage to that of multiple sclerosis may be striking in some cases. Other cases with spasticity, muscular atrophy and fibrillary twitching may closely simulate amyotrophic lateral sclerosis. A third group with posterolateral involvement of the spinal cord and peripheral neuritis resembles combined toxic disease of the spinal cord.

When neuralgic pains or gross sensory defects persist and are accompanied by spasticity and muscle weakness, the diagnosis of acute disseminated encephalomyelitis must be considered, and the history of an acute phase carefully explored. In many cases a retrospective diagnosis can be made. Five patients in this series have already shown relapsing features, but these were slight in some instances. Nevertheless, the evidence is accumulating to show that the occurrence of a relapse does not exclude the diagnosis of encephalomyelitis. As Bassoe¹¹ wisely commented, both clinical and anatomic studies render the distinction between disseminated encephalitis and multiple sclerosis more obscure and threaten to break down cherished boundary lines. Not only are residual phenomena and relapsing tendencies of encephalomyelitis more common than was indicated by early reports, but their nature is as diversified as that of the acute phase itself.

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ABSTRACT OF DISCUSSION

DR. HOWARD D. MCINTYRE, Cincinnati: In reviewing the papers dealing with encephalitis which Dr. Bassoe had reported in the yearbooks from 1914 to the present time, I found two outstanding facts. Prior to 1917 there were few papers dealing with encephalitis in any phase. From 1917 to 1922 the epidemic of encephalitis occurred and a veritable avalanche of papers appeared. In 1922 a new disease, described under various headings such as disseminated encephalomyelitis and neuromyelitis optica, appeared. Last April I reported in THE JOURNAL twenty cases of an unusual type of encephalitis observed in the vicinity of Cincinnati in 1932 and 1933. I noticed that the majority of

9. McAlpine, D.: Acute Disseminated Encephalomyelitis: Its Sequelae and Its Relationship to Disseminated Sclerosis, *Lancet* 1: 846 (April 18) 1931.
10. Grinker, R. R., and Bassoe, P.: Disseminated Encephalomyelitis: Its Relation to Other Infections of the Nervous System, *Arch. Neurol. & Psychiat.* 25: 723 (April) 1931.

11. Bassoe, Peter, and Ebaugh, F. G.: The Practical Medicine Series, Year Book 1932, Neurology and Psychiatry, Chicago, Year Book Publishing Company, Inc.

the authors' cases appeared from 1931 to 1933. I am sure that we were dealing with the same disease. The only difference consists in the inclusion in my series of several cases showing an acute hemorrhagic condition with blood in the spinal fluid. I know that I made the mistake of diagnosing some of these cases of hemorrhagic encephalitis as cerebral hemorrhage or spontaneous meningeal hemorrhage. One case suddenly presented weakness in the legs and was diagnosed as an instance of Landry's paralysis. In the course of four days a facial paralysis developed. The acute symptoms cleared up but within a few weeks changes in the spinal cord appeared, with incontinence of urine and feces. The patient eventually made a complete recovery. I note a similar case in the series of Drs. Stout and Karnosh. There were two cases presenting the syndrome of transverse myelitis. The case of herpes labialis interested me greatly. That of course brings to mind the contention of Levaditi as to the cause of epidemic encephalitis. During the acute stage of herpes a patient of mine had fever, pronounced headache and somnolence. When he recovered from the acute illness, the symptoms of marked extrapyramidal disease developed. I have seen two more instances of extrapyramidal disease following immediately an attack of herpes. In the beginning of the epidemic I did not observe extrapyramidal residuals. However, after about eight months I began to observe a few such cases. I saw a patient who, in the acute stage of her encephalitis, had extrapyramidal syndrome with foot drop and pyramidal signs. She recovered almost completely and the parkinsonian syndrome has almost entirely disappeared. The differential diagnosis of this disease is most difficult in the hemorrhagic type. Two mistakes are made: The disease may be called cerebral hemorrhage or meningeal hemorrhage, or a spontaneous hemorrhage may be confused with the disease. In the brains studied an intense congestion with diapedesis of the red and white cells through the pial vessels was observed in one; a frank perivascular inflammatory reaction with the same type of congestion in another. One brain showed a pronounced perivascular degeneration with mild meningeal reaction. The most interesting finding was in a boy who died six months after the acute onset of the disease and whose brain showed glial proliferation with perivascular degeneration, the aftermath of an acute infectious brain disease.

DR. THEODORE T. STONE, Chicago: Acute disseminated encephalomyelitis is an acute inflammatory disease that involves more than one part of the central nervous system. It is characterized clinically by a history of infection, usually of the upper respiratory type, and gives rise to a multiplicity of neurologic signs and symptoms; namely, fever, ocular palsies, pupillary disturbances, signs of meningeal involvement, radicular pains, stupor, hyperkinesia, hypokinesia or actual paralysis, reflex changes, sensory abnormalities, pleocytosis and colloidal gold curve change in the spinal fluid. One obviously concludes that this infection is protean in nature and is therefore capable of producing a clinical picture that is present in acute multiple sclerosis, acute poliomyelitis, acute hemorrhagic encephalitis and Schilder's disease. In other words, acute disseminated encephalomyelitis may result in a clinical picture that may be found in any acute disease of the brain and spinal cord whether it be inflammatory, degenerative, toxic or vascular. The mode of onset of this disease is as variegated as its clinical picture. It may be sudden or gradual. The early symptoms may involve any part or all of the central nervous system, such as a peripheral nerve, the spinal cord, the pons, the medulla oblongata, the cerebrum, the cerebellum and the cranial nerves. The histopathologic changes depend much more on the structure of the involved part than on the pathogenic organism. In all acute inflammatory processes of the brain and spinal cord there is a certain amount of meningeal reaction, some perivascular changes such as infiltration or edema, some minute hemorrhages, a moderate degree of primary and secondary degeneration of the ganglion cells and a variable amount of glial reaction. All these changes occur simultaneously. The course of the disease is similarly dependent on the location of the lesions as well as on the intensity and acuteness of the infecting process. One and the same type of infectious virus or organism may produce a mild clinical picture in one case and a severe one in another case. The type or character of the sequelae depends on the part

of the brain or spinal cord that remains involved. Accordingly, one may see pyramidal, extrapyramidal, cranial nerve, pontile, bulbar, cerebellar, spinal cord and peripheral nerve symptom complexes or any combination of them. The diagnosis of acute disseminated encephalomyelitis is usually made without difficulty. I believe that trying to label a case as belonging to a certain form of encephalitis is not possible in every instance and is unnecessary because there is no known specific or reliable form of therapy for any of the encephalitides included in this group. Multiple sclerosis, acute multiple sclerosis and poliomyelitis must be ruled out. The treatment at present is entirely symptomatic.

DR. GERALD F. KEMPF, Indianapolis: During the summer of 1931 an acute meningo-encephalopathy appeared in Indianapolis which has been seen since then and which is considered epidemic. There are certain similarities as well as fundamental differences between the cases in Indianapolis and those described by the authors. There were more than 200 cases in Indianapolis. More than 100 of these were acute, and probably as many as 40 were of the fulminating type with death within twenty-four to forty-eight hours after admission to the hospital. The disease is ushered in with an acute infection of the upper respiratory tract like that described by the authors. However, that doesn't necessarily make it the same, because meningococcal meningitis, poliomyelitis and other infectious diseases are frequently ushered in in the same way. Epidemic encephalitis is sometimes preceded by an attack of influenza. In all acute cases the cerebral symptoms entirely overshadow the spinal symptoms. The milder ones frequently resemble endemic meningococcal meningitis without petechial hemorrhages and on spinal puncture yield clear fluids. The sequelae described by Drs. Stout and Karnosh have not been seen. For that reason, I feel that they were perhaps different or that the difference was due to the fact that they were treated differently. The epidemic paralleled and followed an epidemic of meningococcal meningitis. During 1929 and 1930, sporadic cases were seen during the meningococcal epidemic which were treated as meningococcal cases in which a cloudy fluid had not yet developed. For that reason, when, during the summer of 1931, a difference between the two types of patients began to be seen, daily spinal drainage was done. When this was done, the patients were allowed to be up for a few days and, if they exhibited any symptoms, the drainage was resumed. So far, after more than two years, none of the sequelae of epidemic encephalitis and no permanent damage to the nervous system have been seen. As a peculiar sequel, five patients returned a year later with secondary anemia. There has been ample time for an epidemic of this nature to reach Cincinnati and possibly Cleveland. Cases have been seen in eastern Indiana towns. Similar cases have been reported from Kansas City, where epidemic meningitis had occurred. A transient case from Detroit was seen following the epidemic there. Either all of these cases are an acute disseminated encephalomyelitis and daily spinal drainage has been a good therapeutic measure, or the two conditions are entirely different. I wish to ask the authors whether there was any proof that a virus was associated with this disease.

DR. RICHARD E. STOUT, Cleveland: I am glad that Dr. McIntyre brought up the possible relationship of this disease to other encephalitides that have been described throughout the world in recent years. I am glad to hear him state that he considers the syndrome we have seen essentially the same or related to the condition he observed in Cincinnati. In only one case observed did we find bloody or xanthochromic spinal fluid. Because of some differences in the clinical symptomatology, we did not include it in this series. This patient was admitted to the psychiatric service because of a mild depression. Shortly after admission the patient developed severe choreo-athetoid movements and following this passed into delirium and stupor and died within two weeks of the onset. Pathologic changes in the brain were minimal but consisted of extravasation of red blood cells into the Virchow-Robin spaces and into the subarachnoid space, and of very slight perivascular infiltration. We wish to emphasize that the clinical picture of this disease is hard to differentiate, both in the acute and in the chronic stage. We have fortunately been able to follow all our cases except one, some of them for an inadequate period of time, but we have observed a large number of residual manifestations. We feel

that the time has not yet arrived to state that extrapyramidal residual features do not occur; as yet we have not observed them. Our cases are somewhat different from Dr. Kempf's in that spinal manifestations predominated in the clinical picture in at least two thirds of our series. However, there are several modifying factors that may account for this. We have done no bacteriologic studies in these cases to prove that there is a virus. We feel, however, that this disease behaves similarly to other diseases commonly regarded as virus diseases, such as poliomyelitis and epidemic encephalitis.

PRESENT-DAY CANCER PROBLEMS

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The cancer problem today is one of the greatest challenges facing the medical profession. With an insidious and usually painless onset, an increasing death rate, many unknown factors in etiology and the lack of opportunity for seeing many cases in the early and curable stages of the disease, the profession is faced with a monumental task in developing an effective program of prevention and control.

Whether or not cancer is actually increasing is beside the point as far as this discussion is concerned. Statistically one knows that the death rate is increasing steadily, and since 1900 has been stepped up nearly 65 per cent. Cancer is being found in the younger age groups more frequently than formerly, authentic cases of carcinoma having been reported in the new-born and in children under 2 years of age. In 1930 more than 115,000 deaths from this disease were reported from the registration area of the United States, approximately 1 in each 11 or 12 deaths for that year. In many states deaths from cancer are 10 per cent of all deaths, and in some states they account for an even higher percentage.

It is estimated that there are 3 living patients for each death, so that probably not far from 500,000 patients in the United States are alive today with this disease. This may not be such a large number when compared to the figures for other diseases often seen in epidemic form, but when it is realized that the death rate from this disease is 100 per cent unless effective therapy is instituted early, the problem assumes an importance out of all proportion to the numbers involved. Probably 50 per cent of the present deaths from cancer could be prevented if treatment were undertaken in time, and a very large percentage of all malignant lesions of the skin, mouth, breast and cervix could be cured if they were discovered sufficiently early and were subjected to adequate and competent therapy.

From surveys that have been made it has been found that approximately 25 per cent of cases of cancer are hospitalized at some time during their course. What happens to the remaining 75 per cent? Where and how are these patients treated? There is no definite information at this time beyond the probability that many go untreated, many more are seen in physicians' offices, and a certain number fall into the hands of quacks and charlatans. From these surveys it has been found that only about 2 per cent of adults admitted to general hospitals have cancer. As the number of deaths

from cancer closely approximates the number of practicing physicians in the average community in the course of a year, there would be but three patients with cancer per physician per year if all such cases were divided equally among members of the profession. This means that physicians in some forms of practice seldom if ever see a case of malignant tumor while others in special surgical fields, in radiology and similar specialties, see many cases.

The only recognized forms of therapy are surgery and irradiation by high voltage roentgen therapy and by radium. These may be employed either singly or in combination. At this time comparatively few hospitals have the facilities or the personnel to use all these therapeutic agents in an adequate and competent manner. Surgery is available, but often high voltage roentgen therapy and radium are lacking. As special skill and training are necessary to the competent use of radiation therapy it does not always follow that a competent personnel is available even though the mechanical equipment has been installed in a hospital or a physician's office.

Present knowledge and experience in the diagnosis and treatment of cancer indicate that it is not a "one man" disease. No one physician is capable of diagnosing and treating all forms of malignant tumors that may be encountered in the course of his practice. More often than not it takes the pathologist, the roentgenologist and the internist, in addition to the surgeon, to arrive at an accurate diagnosis, and on the interpretation of their observations therapy should be based. The care of the patient, with cancer, therefore, becomes a group problem, the surgeon, internist, pathologist and radiologist each contributing of his diagnostic skill and therapeutic ability to the case. Of this group the pathologist has an especial responsibility, as his observations of the type and structure of the tumor determine the therapy to be employed. For this reason the pathologist should have a more prominent place in the hospital staff organization than he now enjoys in many cases. He should see the patient at the bedside and have a voice in the decision on biopsy and where one should be taken if indicated. If a biopsy is to follow an exploratory incision, the pathologist should select the tissue for examination and by frozen section be able to tell the surgeon just what he is dealing with so that the indicated procedures can be effectively carried out. Chemical analysis of secretions and excretions often throw much diagnostic light on the character of a tumor. In other words, the pathologist to be capable in the diagnosis of tumor tissue must, at times, move out of the laboratory into the ward and operating room. He must be able to interpret the physiologic, chemical, physical and clinical observations of each patient in addition to the microscopic picture of the stained specimen. If the pathologist is confined to his laboratory and sees only such tissues as are submitted to him he cannot do justice to his work or to the patient. His interpretations of tissue are all the more valuable when he has the added clinical experience and information that a consultation on these cases would give.

Too often in hospitals in smaller communities there is no laboratory examination of tissues, owing to lack of a pathologist and laboratory equipment, and the entire diagnosis rests on the physician or surgeon who treats the patient. This is unfair to the patient and throws too much responsibility on the attending physi-

cian as to whether or not he is dealing with malignant tumors. Many neoplasms have undoubtedly been overlooked and many benign tumors have been treated as malignant with the unnecessary sacrifice of tissue because proper examinations of tissues have not been made. This lack of laboratory facilities is being met in certain places, notably in the Province of Alberta, Canada, and in New York, by the enactment of a law, or the promulgation of a rule having the effect of law, that all tissues removed at operation must be subjected to examination in a laboratory approved by the state. In other instances such laboratory services are being offered on a voluntary basis by state laboratories. The best interests of the patient suggest that some such procedure be carried out in all states. If adequate facilities are not available elsewhere it is only reasonable to expect that they will be provided by the state, so that no patient will be subjected to an operation for the removal of suspected malignant tissue without the examination of such tissue by a competent pathologist.

Because of the expense involved, it is not to be expected that all hospitals will equip themselves for adequate cancer diagnosis and therapy. A few such hospitals in each state would serve the needs of the public much better than is now the case in many states. There are now but ten or twelve special cancer hospitals in the United States, and some of them lack facilities to care properly for all types of malignant growths that may be encountered. It is believed that there should be one such well organized hospital in every state, and if there is a medical school in the state this hospital should, if possible, be attached to it in order to provide the best possible facilities for undergraduate education in cancer diagnosis and therapy. The educational advantages of such institutions also should be freely available to the physicians of that community. It has been found too often that the public has been led to want a service for cancer the medical profession and hospitals cannot supply. Until there are adequate facilities in all communities for the diagnosis and treatment of cancer it would seem the wisest policy to concentrate efforts on the development of such facilities rather than to stimulate the public to ask for and expect services that are not available. When a community is properly organized for cancer work the emphasis then may well be laid on the education of the public as to the value of early diagnosis and treatment.

Two fallacious ideas about cancer cling tenaciously to the layman's mind: one, that cancer from the beginning is an incurable disease; the other, that there is a social disgrace connected with the disease. Both are false and until eradicated from the public mind little headway can be expected in combating the condition. The public must be taught to focus its attention on the *beginning* of cancer rather than its *end*. It must come to know the early signs and symptoms of the disease, the lump, the unhealing sore, the unnatural discharge, particularly if blood-stained, the persistent indigestion with loss of weight, and the change in size or color of moles or warts. One or more of these signs should indicate to the mind of the patient, as well as of the physician, the possibility of malignancy, and further inquiry should be pursued until the answer is obtained.

The physician first seeing a patient with cancer determines largely the outcome of the case. If the physician recognizes malignancy, or the possibility of malignancy, and proceeds to find the answer, the life of the patient

will undoubtedly be saved or greatly prolonged beyond what would be the case if the physician temporizes and indulges in some watchful waiting to see if the condition will not diagnose itself by means of metastases or other obvious signs. There are two periods in the experience of the patient with cancer that largely determine the outcome of each case: one, the time elapsing after the patient knows or thinks something is wrong and a physician is consulted; the other, the time wasted by the physician in waiting for more definite signs or symptoms that will make the diagnosis easier. The period of waiting by the patient can be excused in many cases because of ignorance or fear on his part; that of the physician, never. Unless he is in a position to get the answer to the patient's question he should not delay in placing the patient in the hands of those who can give the answer. Every case of cancer is an emergency, not for precipitate and unknowing surgical measures, but for immediate examination to determine if the condition is cancer and if this is found to be so, for expeditious and competent therapy.

Physicians should remember that cancer is practically the only disease in the field of medicine in which the skill of the physician alone can effect a cure. If untreated, cancer always kills, but if one eradicates all cancer tissue from the body or kills it in the body, a cure is possible. With few exceptions this cannot be said of any other disease.

A complete service to the patient with cancer has not been discharged when the first treatment has been given. More than in any other disease it is necessary to maintain close contact with such patients after treatment. Their hospital records should remain in the open file, and periodic notations of the state of the patient's health should be made thereon. The obtaining of such information might well be a joint responsibility of the attending physician and of the hospital. These patients should be followed for at least five years and preferably for life.

Such a follow-up service requires the full cooperation of the patient. This may be difficult to obtain unless he is fully aware of the value of such service. If he is not told his true condition but is put off with some fairy tale about swollen glands or similar stories, he will often not appreciate the seriousness of his condition and will neglect to cooperate with the physician in careful post-treatment observations. For this reason the plan of advising the patient with cancer fully of his condition is being extended more and more, and where it is being so used only favorable results are noted. Good cooperation is obtained, and vague fears are put at rest. A few neurotic persons may worry unduly about their condition, but if in place of cancer they had falling hair or falling arches they would worry just as much. They can be ignored when compared with the large number of patients who have an intelligent interest in their condition and who will cooperate fully with the physician in the handling of their cases.

Too few physicians realize the extent of public education in health and medical matters. It is no longer possible to draw a veil of mystery and secrecy over the activities of all things medical because the public is being bombarded daily with information and misinformation along health and medical lines. The time has come for members of the profession to be frankly honest with their patients, especially the more intelligent patients, on all matters pertaining to their health and welfare.

This situation is already giving rise to some undesirable precedents in the field of control of cancer. Ten states now make cancer a reportable disease. Massachusetts has adopted a full cancer program under the control of the state department of health with a large hospital for all types of treatment and clinics held at periodic intervals throughout the state. The law creating this service states that this work shall be done with or without the cooperation of the local physicians. When the public is sufficiently aroused to move for action on a question of this kind it goes directly to the legislature for assistance. This is a situation that often leads to misunderstandings and friction of many kinds. The medical profession should keep this fact in mind, and build its cancer control program so as to make unnecessary any such lay interference.

The cancer problem is in the hands of the profession where it properly belongs, but it will not remain there indefinitely unless efforts are made to improve the facilities for diagnosis and treatment. It is to be hoped that the tendencies toward state control of this problem will be of slow development and that the profession will assume an increasing responsibility in the control of this disease.

Clinical Notes, Suggestions and New Instruments

COCCYGEAL HERNIA

R. ANGUS NICHOLS, JR., M.D., AND A. L. HERRING, M.D.
RICHMOND, VA.

The rarity of coccygeal hernia is comprehensible when the density of the anatomic structures involved is considered. The supporting mechanisms of the pelvic and anal diaphragms and associated ligaments practically preclude the occurrence of hernia in the anococcygeal area. In main, the structures to be considered are the gluteus maximus muscles and their investing sheath of fascia lata, which lies beneath the skin, and the two layers of the superficial fascia. In this region the gluteus maximus arises from the lateral portion of the lower sacral and coccygeal vertebrae and the posterior aspect of the sacrotuberous ligament. These attachments blend with the superficial and deep layers of the supraspinous ligament, the superficial sacrococcygeal ligaments and the deep posterior longitudinal ligament of the spine. These structures provide an exceptionally strong fibrous support to the pericoccygeal region. Between the tip of the coccyx and the anus lies the fibrous raphe of the iliococcygei and beneath this the aponeurosis of the pubococcygeus. On the deep surface of the levator ani, the endopelvic fascia and the uterococcygeal or prostaticococcygeal ligaments blend with the anterior sacrococcygeus muscles and ligaments. In order for a hernia to appear in this area, some loss of substance, following either operation or severe trauma, must precede the development of the rupture.

In reviewing the literature, we have been able to find only one reported case of coccygeal hernia.¹ Dr. Pagenstecher's patient was a white woman, aged 50, who received a fracture of the coccyx during parturition twenty-seven years prior to surgical removal of the coccyx for relief of pain. Seven months later she returned, complaining of pain, inability to sit in comfort, the development of a mass, and the sense of sitting on her bowels. The patient was treated by excision of a sac the size of an orange and approximation of adjacent muscle and fibrous tissue with chromic catgut. The final result was good.

REPORT OF CASE

C. B., a white man, aged 38, a clerk, admitted to Grace Hospital, Aug. 10, 1931, complained of pain in the lower end of the spine following an accident about six weeks before. The pain had been constant and of a dull, aching character, most noticeable when the patient was sitting, when there was appar-

ently a sense of protrusion, at times associated with sudden increase of pain. He also had a sensation of something moving beneath the skin. The stools were apparently normal, though defecation was somewhat painful. There were no urinary symptoms.

The patient had had the usual childhood diseases; his general health had been good until the past three or four years, during which time he had attacks of neuralgia and repeated attacks of subacute tonsillitis. In 1924 the patient had a traumatic injury to the end of the spine, with resultant fracture of the coccyx. During the same year he underwent an operation for surgical removal of the coccyx. According to the history, the postoperative convalescence was uneventful, with a small amount of drainage for a few days only, and healing was apparently by primary union. He had no trouble in this region until the onset of the present illness.

The patient had an occasional headache. There was no enlargement or rigidity of the neck, but he had repeated attacks of swelling of the cervical glands, sometimes accompanied by tenderness. A progressive deafness of the right ear had developed since the onset of the recurrent attacks of tonsillitis. There was an occasional cough without expectoration, dyspnea, palpitation or cyanosis. At times he experienced a choking sensation in the throat and upper part of the mediastinum. The appetite was good; food agreed with the patient, and there was no nausea or vomiting. His weight was constant. The stools were normal except for some discomfort on defecation. The spine and extremities were normal except for transient attacks of neuralgia in the upper extremities.

The patient was well developed and well nourished, apparently not acutely ill. The skin was soft and moist; there was no rash or eruption. The pupils were round and equal and reacted to light and in accommodation. A slight degree of dental caries was present. The tonsils were moderately enlarged, cryptic and chronically inflamed, with redness of both anterior pillars, and slight adenopathy of the posterior cervical chain on both sides. The heart was not enlarged, with a rate of 86, regular rhythm and no murmurs; the blood pressure was 126 systolic, 84 diastolic. There was slight tenderness in both lower lumbar regions which had been present since the fall six weeks before, but it was rather mild in character. At the end of the spine there was a healthy postoperative scar over the region of the coccyx with no mass visible. On straining, however, an impulse could be felt, and on pressure definite crepitation could be elicited in this area. It was difficult to have the patient exert enough pressure to determine the extent of the protrusion, since straining produced pain. A preoperative diagnosis of postoperative coccygeal hernia was made and the patient was prepared for operation.

The urine was normal. Examination of the blood showed: hemoglobin, 71 per cent; white blood cells, 11,100; neutrophils, 94 per cent. The temperature was 99 F.

August 11, the patient was taken to the operating room and 125 Gm. of procaine hydrochloride administered intraspinally in the last lumbar interspace. He was then placed in a right Sims position, and the buttocks and perineum were prepared with iodine and alcohol, and draped. A slightly curved incision, excising the old postoperative scar, was made. As soon as the skin was freed, a mass about 2 by 1½ by 1½ inches (5 by 3.75 by 3.75 cm.) protruded from the coccygeal area. This could be reduced easily and proved to be a hernia of the rectum through the coccygeal aperture, with the neck of the sac as great as the largest circumference of the mass. With an assistant's finger in the rectum, the finger could be felt within the protruding sac. No peritoneal sac could be found, the hernia apparently developing below the mesentery attachment of the rectosigmoid junction. The mass was then invaginated by three purse-string sutures of number 2 tan catgut. The delinquent portion of the levator ani was approximated with interrupted sutures of tan catgut, and the portion of the sacrotuberous ligaments and the gluteus maximus muscles were freed up and sutured in their position with interrupted sutures of tan catgut. The skin and superficial fascia were then approximated with silkworm gut sutures.

The postoperative diagnosis was postoperative coccygeal hernia.

The patient was placed on a nonresidue diet, so that there was no stool for eight days following the operation. The

1. Pagenstecher, G. A.: Coccygeal Hernia, J. A. M. A. 95:1588 (Nov. 22) 1930.

wound united by primary union, and the patient was discharged from the hospital in good condition on the fifteenth day after operation. He was seen about three months later, when he returned to the hospital for a tonsillectomy. At this time, a thorough investigation of the rectal and coccygeal areas was made, and there had been no recurrence of the hernia. The stools were normal. Aside from transient, low grade, dull aching pain, the patient was apparently in excellent condition.

2618 Grove Avenue—407 West Grace Street.

Committee on Foods

REPORTS OF THE COMMITTEE

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

BLAIR'S CERTIFIED NORTHERN TYPE FLOUR (BLEACHED)

Manufacturer.—Blair Milling Company, Atchison, Kan.

Description.—A hard winter wheat "long patent" flour; bleached.

Manufacture.—Selected hard winter wheat is cleaned, washed, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-ninth ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (1 pound per 50 barrels of flour).

Claims of Manufacturer.—For bread baking.

THOMSON AND TAYLOR ROOT BEER CONCENTRATE

Manufacturer.—Thomson and Taylor Company, Chicago.

Description.—A root beer concentrate or beverage flavor containing the water extract of ginger, hops, coriander and anise, oils of sassafras, wintergreen, cassia, cloves and anise, vanilla, gum arabic and caramel coloring.

Manufacture.—The ingredients are mixed with water and automatically filled into bottles.

Analysis (submitted by manufacturer).—

	per cent
Moisture	66.3
Total solids	33.7
Ash	0.3
Nitrogen	0.1
Volatile oils	0.6
Reducing sugars as dextrose	6.2
Sucrose (copper reduction method)	1.1
Non-sugar solids (by difference)	26.4
Coloring matter—caramel	

Claims of Manufacturer.—Root beer concentrate complying with the respective United States Department of Agriculture definition. For preparing either yeast fermented or artificially carbonated root beer.

SMACO HYPO-ALLERGIC WHOLE MILK POWDER

Manufacturer.—S. M. A. Corporation, Cleveland.

Description.—Spray-dried whole milk made less allergic by prolonged processing.

Manufacture.—The milk used is collected in accordance with the provisions of the sanitary code of the Cleveland Board of Health. On receipt at the dairy the milk is examined, pasteurized by the holding method, cooled, standardized to 3.5 per cent milk fat content, homogenized, sealed in specially con-

structed cans, autoclaved at 115 C. for a prolonged period, cooled, removed from the cans, spray dried and automatically sealed in tins in an atmosphere of nitrogen.

Analysis (submitted by manufacturer).—

	per cent
Moisture	2.
Total solids	98.
Ash	6.
Fat	27.
Protein (N \times 6.38)	26.
Lactose (by difference)	39.

Calories.—5 per gram; 142 per ounce.

Claims of Manufacturer.—Specially prepared for individuals subject to allergic reactions from usual milk or dried milk preparations. For use in regular infant feeding formulas and in the baking and cooking of special dishes for milk-sensitive patients.

HIGHLAND SLICED WHITE BREAD

Manufacturer.—Langendorf United Bakeries, Inc., San Francisco and Seattle.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, sucrose, shortening, dextrinized starch, salt, powdered skim milk, yeast, malt extract syrup, and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

CLAPP'S ORIGINAL APPLE SAUCE (ADDED SUGAR)

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Strained, cooked apple sauce with added sugar. The method of preparation is efficient for retention in high degree of the natural vitamins and minerals.

Manufacture.—Purchased canned apples are strained in a steam atmosphere, admixed with a definite proportion of sugar, canned and processed as described for Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

Analysis (submitted by manufacturer).—

	per cent
Moisture	85.8
Total solids	14.2
Ash	0.4
Fat (ether extract)	0.7
Protein (N \times 6.25)	0.1
Crude fiber	2.1
Carbohydrates other than crude fiber (by difference)	10.9

Calories.—0.5 per gram; 14 per ounce.

Vitamins and Claims of Manufacturer.—See Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

LARSEN'S PEAS (STRAINED-UNSEASONED)

Manufacturer.—The Larsen Company, Green Bay, Wis.

Description.—Sieved green peas prepared by efficient methods for retention in high degree of the natural vitamin and mineral values of the raw green peas. No added sugar or salt.

Manufacture.—Freshly harvested peas are removed from the pods, washed, sorted by hand to remove any foreign material, again washed, blanched in hot water until soft, puréed as described for tomatoes (THE JOURNAL, July 1, 1933, p. 35), admixed with a small amount of water to produce a desired consistency, heated in a closed vessel at 82 C. and automatically filled into washed cans, which are sealed and processed for sixty minutes at 116 C.

Analysis (submitted by manufacturer).—

	per cent
Moisture	86.0
Total solids	14.0
Ash	0.4
Salt (NaCl)	0.0
Fat (ether extract)	0.4
Protein (N \times 6.25)	4.4
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	8.4

Calories.—0.5 per gram; 14 per ounce.

Vitamins and Claims of Manufacturer.—See Larsen's Strained Tomatoes Unseasoned—Ready for Use (THE JOURNAL, July 1, 1933, p. 35).

PABLUM
(PRE-COOKED)

Manufacturer.—Mead Johnson and Company, Evansville, Ind.

Description.—Mixture of wheat, oat and yellow corn meals, wheat embryo, bone meal, alfalfa leaf, dried brewers' yeast and sodium chloride; contains substantial amounts of vitamins A, B, E and G and the mineral elements calcium, phosphorus, iron and copper.

Manufacture.—The ingredients in definite proportions are mixed with water, steam cooked under pressure for twenty minutes, dried to 7 per cent moisture content, flaked and automatically packed in cartons

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.0
Ash	3.7
Fat (ether extraction method)	3.0
Protein (N \times 6.25)	15.0
Crude fiber	0.7
Carbohydrates other than crude fiber (by difference) ..	70.6
Chlorine (Cl)	0.98
Calcium (Ca)	0.78
Sodium (Na)	0.66
Phosphorus (P)	0.62
Potassium (K)	0.40
Magnesium (Mg)	0.13
Sulphur (S)	0.02
Silicon (Si)	0.02
Iron (Fe)	0.024
Copper (Cu)	0.0013

Calories.—3.7 per gram; 105 per ounce.

Vitamins.—Vitamin A, 1 U. S. P. unit per gram; vitamins B and G (B complex), 12 Chick and Roscoe units per ounce (2.5 Gm. is necessary to produce in albino rats for seven weeks an average gain of 10 Gm. weekly).

Claims of Manufacturer.—Already cooked; requires only admixture with water or milk of any desired temperature for table use. Cream, salt and sugar may be added according to individual taste. Richer than common cereals in mineral constituents, especially calcium, phosphorus, iron and copper; has an alkaline-forming ash.

Recommended as a general cereal for infants, children and adults; as a thick cereal or gruel in special diets, and for muffins, puddings and desserts.

GERBER'S STRAINED SPINACH

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Strained cooked spinach retaining in high degree the natural vitamin and mineral values; the coarser fibrous material is removed. No added seasoning or sugar.

Manufacture.—Spinach grown from selected seed under company supervision is harvested at the proper state of maturity, promptly cleaned, hand trimmed, inspected, cooked until soft in a glass lined retort, canned and processed as described for Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

Analysis (submitted by manufacturer).—

	per cent
Moisture	93.4
Total solids	6.6
Ash	1.3
Fat (ether extract)	0.4
Protein (N \times 6.25)	1.8
Reducing sugars before inversion (as invert)	0.2
Sucrose (copper reduction method)	0.2
Starch (acid hydrolysis method)	0.4
Crude fiber	0.5
Carbohydrates other than crude fiber (by difference) ..	2.6

Calories.—0.2 per gram; 6 per ounce.

Vitamins, Minerals and Claims of Manufacturer.—See Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

CAREY'S SALT (FREE RUNNING)

Manufacturer.—The Carey Salt Company, Hutchinson, Kan.

Description.—Table salt containing 0.7 per cent added magnesium carbonate.

Manufacture.—The salt is obtained by evaporation of salt brine prepared from rock salt deposits in the earth. Water is pumped down to the salt deposits; the resultant brine is pumped to the surface, treated with lime and sodium carbonate, and stored in tanks to permit insoluble matter to settle out.

The brine is filtered and concentrated in "vacuum" evaporators; the salt crystals drop to the bottom and are removed, centrifugated to remove excess moisture, dried in rotary driers, and screened to grade the crystals according to size. Salt of a definite granulation is admixed with magnesium carbonate (0.7 per cent) and automatically packed in cartons; .

Analysis (submitted by manufacturer).—

	per cent
Moisture	0.01
Calcium carbonate	0.02
Calcium sulphate	0.82
Calcium chloride	0.03
Magnesium chloride	0.02
Magnesium carbonate	0.65
Sodium chloride (NaCl) by difference	98.4
Iron and aluminum oxides	0.01

Claims of Manufacturer.—Carey's Salt is for all table and cooking uses of salt. The added magnesium carbonate tends to preserve its "free running" qualities. Does not cake or harden in the package.

CELLU HARD GUM DROPS (WITHOUT FOOD VALUE.

ASSORTED FLAVORS. GUMS, CITRIC ACID,
FLAVORING, SACCHARIN AND
CERTIFIED COLORING)

Manufacturer.—Chicago Dietetic Supply House, Chicago.

Description.—Gum drops containing gum arabic, water, citric acid, flavoring (true fruit raspberry flavor, oils of cassia, anise, lime, peppermint, lemon or orange, or extract of hoarhound), saccharin (0.4 Gm. per 4 ounces) and certified color. The hoarhound drops contain menthol also.

Manufacture.—The gum arabic is dissolved in the water; the solution is permitted to stand from twelve to fifteen hours, skimmed and strained through a fine sieve. The remaining ingredients are added to the clear solution, which is dropped on molds of fine "Cellu" flour (cellulose) and allowed to cool and harden. The hardened drops are removed from the molds, freed from cellulose and packed in pound or quarter pound packages.

Analysis (submitted by manufacturer).—

	per cent
Moisture	10.7
Ash	3.1
Fat (ether extract)	0.1
Protein (N \times 6.25)	1.6
Crude fiber	0.0
Saccharin	0.09
Titrate acidity as citric acid	1.5
Alcohol insoluble matter (gums, dextrin, etc.)	88.
Pentosans (as pentose)	28.3

Claims of Manufacturer.—Especially prepared for carbohydrate restricted diets. Do not contain sugar, starch or fat. Sweetened with saccharin.

BLACK BIRD BRAND AMBER TABLE SYRUP
(CORN SYRUP FLAVORED WITH REFINERS' SYRUP)

Packer.—Wheeler-Barnes Company, Minneapolis.

Distributor.—H. P. Lau Company, Lincoln and Fremont, Neb.

Description.—Table syrup; corn syrup base (85 per cent) with refiners' syrup (15 per cent), the same as Golden Oak Brand Amber Syrup (THE JOURNAL, Dec. 3, 1932, p. 1948).

**BANQUET EXTRA FANCY INDIA AND
CEYLON TEA**

Manufacturer.—McCormick and Company, Inc., Baltimore.

Description.—Blend of equal parts of India and Ceylon Orange Pekoe and Pekoe teas.

Manufacture.—The manufacture is essentially the same as described for Banquet Tea—Extra Fancy Orange Pekoe (THE JOURNAL, May 21, 1932, p. 1809).

Analysis (submitted by manufacturer).—

	per cent
Moisture	7.5
Soluble solids	38.1
Total ash	5.4
Water soluble ash	3.6
Acid insoluble ash	0.1
Alkalinity of water soluble ash: 35.2 cc. N alkali solution per 100 grams tea	
Petroleum ether extract	0.6
Volatile ether extract	0.2
Crude fiber	10.8
Tannin	16.3
Caffeine	3.6

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1932-1933 BY THE
COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

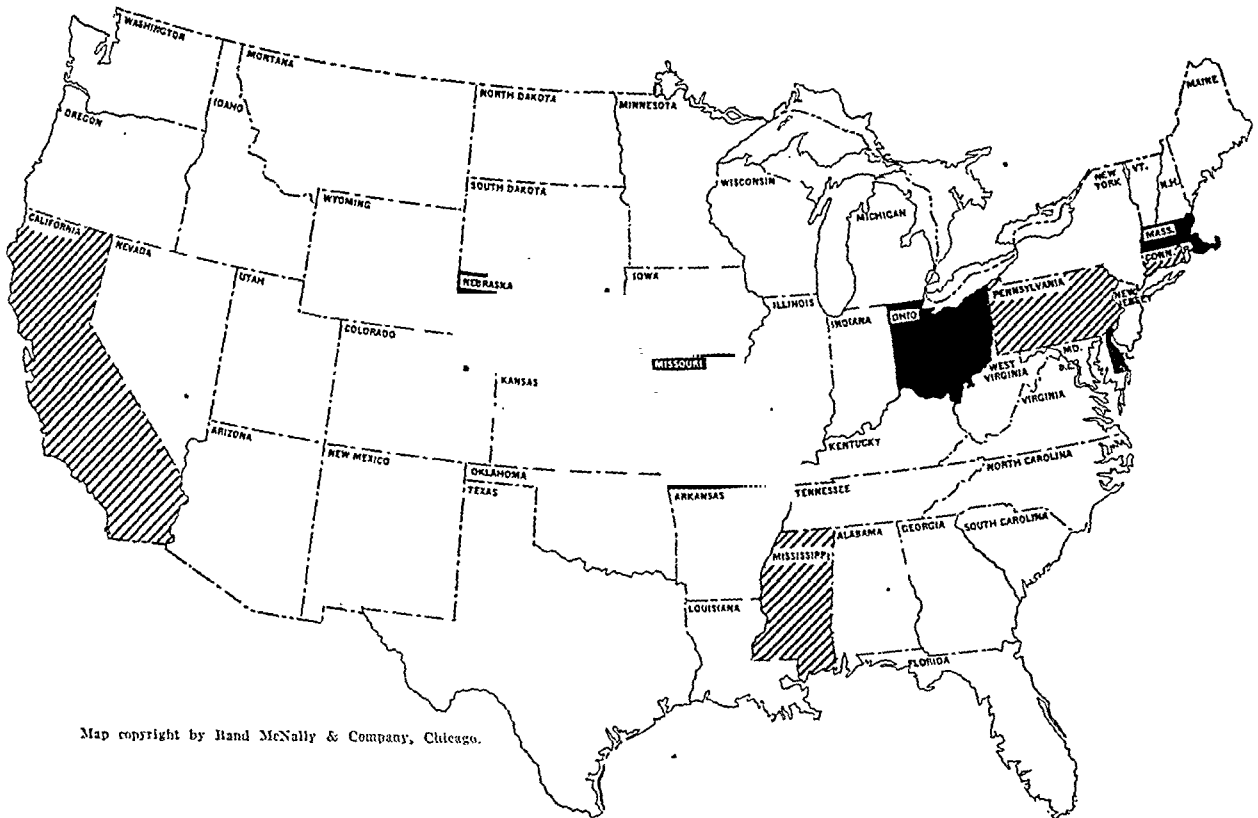
The statistics herewith presented for the year ended June 30, 1933, are based on reports received directly from all the approved, or class A, medical schools in the United States and Canada, from the hospitals approved for intern training and those approved for residencies in the specialties by the Council on Medical Education and Hospitals. Similar data have been published annually in *THE JOURNAL* for thirty-two years.¹ This report is presented in three sections: I. Premed-

ical Education. II. Medical Education. III. Education of Interns and Residents in Approved Hospitals. Also included are a list of hospitals approved for intern training, a list of those approved for residencies in the specialties and a list of institutions offering approved graduate courses. Acknowledgment is here given for the prompt response and the kind cooperation of the officers of the schools and hospitals who have made the presentation of these statistics possible.

PART I. PREMEDICAL EDUCATION

A year ago it was announced that the Council had discontinued the publication of its list of Approved Colleges of Arts and Sciences and Junior Colleges because the same information was being published by the Office of Education in the Department of the Interior at Washington. Bulletin 19 was issued in 1930, and supplements 1 and 2 followed in 1931 and 1932.

American Universities, Middle States Association of Colleges and Secondary Schools, New England Association of Colleges and Secondary Schools, North Central Association of Colleges and Secondary Schools, Northwest Association of Secondary and Higher Schools, and Southern Association of Colleges and Secondary Schools. Otherwise they may find it difficult



Map copyright by Rand McNally & Company, Chicago.

Chart 1.—State Requirements of Preliminary Education. One year required college work indicated by diagonal lines; states in black require high school education and all other states have two-year college requirement.

Because the supply of these documents was inadequate, the Council will again undertake the preparation of its own list, which will be available in the spring of 1934.

Prospective medical students do well to secure their premedical training in colleges that are included in the approved list of the following agencies: Association of

or impossible to enter the medical school of their choice; for, while there is no inviolable rule excluding candidates from unaccredited colleges, the medical schools, in selecting from a large number of applicants, naturally and properly give the preference to those whose preparation has been received in institutions which are known to conform to accepted standards or

1. J. A. M. A. 27:744 (Sept. 21) 1901.

exact of students from other institutions, qualitatively and quantitatively, a higher performance.

TABLE 1.—State Requirements of Preliminary Education

Two Years of College	Effective Date	Two Years of College	Effective Date
Alabama.....	1919	New Hampshire.....	1919
Arizona.....	1922	New Jersey.....	1921
Arkansas.....	1922	New Mexico.....	1922
Colorado.....	1914	New York.....	1922
District of Columbia.....	1929	North Carolina.....	1922
Florida.....	1922	North Dakota.....	1912
Georgia.....	1922	Oklahoma.....	1921
Idaho.....	1938	Oregon.....	1921
Illinois.....	1923	Rhode Island.....	1922
Indiana.....	1915	South Carolina.....	1922
Iowa.....	1915	South Dakota.....	1915
Kansas.....	1922	Tennessee.....	1922
Kentucky.....	1922	Texas.....	1930
Louisiana.....	1922	Utah.....	1926
Maine.....	1920	Vermont.....	1922
Maryland.....	1922	Virginia.....	1922
Michigan.....	1922	Washington.....	1922
Minnesota.....	1912	West Virginia.....	1925
Montana.....	1922	Wisconsin.....	1919
Nevada.....	1922	Wyoming.....	1922

One Year of College	Effective Date
California.....	1924
Connecticut.....	1919
Mississippi.....	1919
Pennsylvania.....	1918

High School Graduation or its Equivalent
Delaware
Massachusetts
Missouri
Nebraska
Ohio

MINIMUM STANDARD

The following statement, taken from the By-Laws² of the Association of American Medical Colleges, has been adopted by the Council and was approved by the

PART II. MEDICAL EDUCATION

DEVELOPMENTS IN MEDICAL EDUCATION

During the past year, medical schools, along with other institutions of higher learning, have struggled to exist. Almost without exception, income has been reduced and budgets have suffered accordingly. Salaries have been cut and faculty appointments terminated, entailing, in some instances, unparalleled hardship because, under existing circumstances, no other appointments were available. A few states have instituted a searching inquiry into the reasons for maintaining professional education at public expense. While standards may have been somewhat impaired, there is reason to believe that there has also been some gain in the direction of a clearer understanding of the mutual responsibilities of the public and those in charge of the training of future physicians.

The year has been marked by the appearance of two significant volumes dealing with medical problems, the Report of the Committee on the Costs of Medical Care and the Final Report of the Commission on Medical Education. Both of these reports raise questions as to the adequacy of current methods in medical education, and Dr. Willard C. Rappleye, director of study, in the commission's report, warns of the dangers that must result if the production of doctors is not drastically curtailed. The Council, at its June meeting, adopted a resolution asking the Association of American Medical College to use its influence to reduce the number of medical graduates.

2. Constitution and By-Laws of the Association of American Medical Colleges, amended, Nov. 15, 1932.

House of Delegates of the American Medical Association in June, 1933:

Sec. 4. Requirements for Admission. Admission to medical schools and medical colleges in membership in the Association may be by:

(1) Satisfactory completion of a minimum of collegiate instruction as provided below in Subsection I; or by

(2) Examination as provided in Subsection II.

Subsection I.³ The minimum of collegiate credit required for entrance to medical schools and colleges in membership in the Association shall be not less than two full academic years, which shall include English, theoretical and practical courses in physics and biology, and in general and organic chemistry, completed in institutions approved by the accrediting agencies acceptable to the Executive Council of the Association. Exception may be made under this section in that any member may admit applicants who have fulfilled the requirement in American and Canadian institutions not approved by such accrediting agencies, provided that all admissions so made be reported to the Executive Council and shall be published in the next Annual Report of the Council.

All collegiate instruction given in satisfaction of this requirement must be based on the same entrance requirements and must be of the same quality and standard of instruction as that required for a baccalaureate degree in the institution in which the candidate receives his preparation.

Subsection II. Admission to medical schools and medical colleges in the Association may be by examination.

Examinations for the purpose of admission by this method shall be conducted by institutions acceptable to the Executive Council of the Association, under the following conditions:

(a) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high order, but who lack credits in not more than two of the required subjects, may be admitted on passing examinations in these subjects.

(b) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credit in any or all of the required subjects, may be admitted on passing examinations in these subjects.

LEGAL REQUIREMENTS

Although, for fifteen years, two years of premedical college training has been required by every class A medical school, there are still nine states which have failed to adopt this standard. Statutory requirements are shown in table 1 with the dates at which they became effective. In chart 1, the same information is presented graphically.

EVENTS OF THE YEAR

The University of Southern California School of Medicine has completed the organization of its five year curriculum. By action of the Council on June 12, 1933, it was rated as an approved, or class A, school. Degrees were conferred this year on a group of seven students who had taken the work of the third and fourth years at the College of Medical Evangelists.

A little more than a year ago, the state of Georgia reorganized its educational system, combining under a single board of regents more than a score of previously independent institutions. The new board ordered a survey of the field by a group of distinguished educational leaders. The cost and the value of the medical school at Augusta were critically appraised. In April the regents voted to discontinue the school on July 1 of this year, but a month later this action was reversed.

The University of Chicago, as the result of a comparative study of the attainments of students having three and four years of preprofessional training, has lowered its admission requirement to three years of premedical work.

At the same time Albany Medical College and the University of Cincinnati College of Medicine have raised their entrance standards from two to three years and Jefferson Medical College has raised its requirements from three to four years.

3. As many schools have admission requirements differing from those given in this section, it is important that intending students of medicine, at an early date, inform themselves as to the exact requirements of that school in which they expect to matriculate.

In the fall of 1931, Louisiana State University opened a medical school in New Orleans on the grounds of the Charity Hospital, which is also a state institution. Students were admitted to the first and third year classes. During the past year all four classes have been in operation. In February of this year the school was approved by the Council.

The University of Mississippi School of Medicine was compelled to make drastic reductions in its budget for the year 1932-1933, so that the medical school not only was unable to make the improvements that had been recommended but was operating under greater handicaps than before. At its February meeting the Council, unwilling to extend further the doubtful status in which it had remained for more than two years, determined that the University of Mississippi School of Medicine should be omitted from the approved list.

The University of Missouri School of Medicine has definitely abandoned the attempt to establish a four year course. It will continue to be, as heretofore, a two year school.

CURRICULUM

According to the revised Essentials of an Acceptable Medical School, the standard curriculum is that provided in the By-Laws of the Association of American Medical Colleges. This requirement would seem to be flexible enough to satisfy any school and is as follows:

Sec. 5. Curriculum. The entire course of four years shall consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours per year, and shall be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated.

	Hours	Per Cent
1. Anatomy, including embryology and histology....	14	18.5
2. Physiology.....	4.5	6
3. Biochemistry.....	3.5	4.5
4. Pathology, bacteriology and immunology.....	10	13
5. Pharmacology.....	4	5
6. Hygiene and sanitation.....	3	4
7. General medicine.....	20	26.5
Neurology and psychiatry		
Pediatrics		
Dermatology and syphilis		
8. General surgery.....	13	17.5
Orthopedic surgery		
Urology		
Ophthalmology		
Otolaryngology		
Roentgenology		
9. Obstetrics and gynecology.....	4	5
Total.....	76	100
Electives.....	24	0

When the teaching conditions demand it, a subject may be transferred from one division to another.

STATISTICS OF COLLEGES

Table 2, pages 680 and 681, lists the approved medical schools that were in session during 1932-1933 and contains figures regarding the total enrolment, the number of students and graduates (men and women), graduates with baccalaureate degrees, teachers, tuition fees by classes, name of executive officer and the dates when the college session of 1933-1934 will begin and end. Changes in the classification which have taken place since the publication of the educational statistics in 1932⁴ can be noted in the footnotes at the bottom of the table. Also contained in the footnotes are references to the schools that give only the first two years of the medical course, that require a hospital internship or laboratory work for graduation, that charge an additional tuition fee for nonresidents, and those which will admit students at varying times during the year. The population of the city in which the medical school is located is also listed. For those institutions which have a divided medical course, the population of the

city wherein the major part of the course is given appears in the table and that of the city offering the remainder of the course appears in a footnote. The data here presented constitute the basis also for several of the subsequent tabulations. Beginning on page 691 will be found a historical sketch of these schools.

MEDICAL COLLEGES, STUDENTS AND GRADUATES BY STATES

The number of colleges, students and graduates for each state are given in table 3. New York, with nine schools, the largest number, naturally had the largest number of students and graduates, 2,684 and 605, respectively. Pennsylvania, with six schools, was second with 2,425 students and 587 graduates. Illinois, with five schools, had 2,233 students and 499 graduates, and California, with four, had 968 students and 176 graduates. The District of Columbia and Massachusetts,

TABLE 3.—Colleges, Students, and Graduates by States

State	Colleges	Students	Graduates
Alabama.....	1	107	..
Arkansas.....	1	197	45
California.....	4	968	176
Colorado.....	1	220	47
Connecticut.....	1	197	38
District of Columbia.....	3	1,087	238
Georgia.....	2	377	90
Illinois.....	5	2,233	499
Indiana.....	1	459	102
Iowa.....	1	373	93
Kansas.....	1	288	61
Kentucky.....	1	248	85
Louisiana.....	2	645	104
Maryland.....	2	695	157
Massachusetts.....	3	1,223	299
Michigan.....	2	809	197
Minnesota.....	1	470	125
Mississippi.....	1	45	..
Missouri.....	3	955	208
Nebraska.....	2	653	146
New Hampshire.....	1	38	..
New York.....	9	2,684	605
North Carolina.....	3	291	15
North Dakota.....	1	56	..
Ohio.....	3	947	214
Oklahoma.....	1	255	56
Oregon.....	1	235	51
Pennsylvania.....	6	2,425	587
South Carolina.....	1	150	35
South Dakota.....	1	45	..
Tennessee.....	3	767	183
Texas.....	2	682	145
Utah.....	1	65	..
Vermont.....	1	150	38
Virginia.....	2	593	146
West Virginia.....	1	140	..
Wisconsin.....	2	592	110
Totals.....	77	22,466	4,895

each with three schools, had more students and graduates than California, and Ohio and Tennessee, with three schools, had fewer students but more graduates. Included among the number of students are the figures for ten institutions which offer only the preclinical courses.

MEDICAL STUDENTS SHOWN BY CLASSES

In table 4, page 682, the students enrolled in each school are shown by classes. The total attendance for the first year was 6,426, or 166 more than the number enrolled for the session 1931-1932. The total attendance for the remainder of the medical course was, respectively, 5,479, 5,017 and 4,948. The two medical schools of the University of Chicago are not operated under the promotion by class system but on an individual plan. There were 596 students thus enrolled, making an increase of more than 100 on the average in each of the foregoing figures as well as for the preceding year. The figures are slightly higher than those for the previous college session.

TABLE 2.—Statistics of Approved, or Class A, Medical Colleges in the United States and Canada. Session 1932-1933

Marginal Number	NAME AND LOCATION OF COLLEGE	Number of Students Registered Since 1932-1933, July 1, 1932				Population of City Where College Is Located	Graduates Since 1932-1933, July 1, 1932				B.A., R.S., Ph.D.	Total Fees (Dollars)				Executive Officer	Session of 1932-1933		Marginal Number
		Men	Women	Men	Women		Men	Women	Men	Women		1st Year	2d Year	3d Year	4th Year		Beclins 1933	Ends 1934	
1	ALABAMA University of Alabama School of Medicine, University (Tuscaloosa)*...	105	2	...	...	20,639	...	...	...	...	23	221	241	...	...	Stuart Graves, M.D., Dean.....	Sept. 6	May 22	1
2	ARKANSAS University of Arkansas School of Medicine, Little Rock 2.....	191	6	41	1	81,679	...	...	...	...	96	165	160	155	155	Frank Vinsonhaler, M.D., Dean.....	Sept. 20	June 5	2
3	CALIFORNIA University of California Medical School, Berkeley-San Francisco 1,2.....	197	34	51	3	634,394	...	...	...	...	379	265	225	225	225	Langley Porter, M.D., Dean.....	Aug. 21 ^a	May 19	3
4	College of Medical Evangelists, Loma Linda-Los Angeles 1.....	330	39	63	5	1,258,048	...	...	...	...	251	385	480	440	440	E. H. Risley, M.D., Dean, Loma Linda.....	July 2	June 17	4
5	University of Southern California School of Medicine, Los Angeles 1,4.....	146	11	7	...	1,258,048	...	...	...	...	6	420	435	435	435	A. E. Coyne, M.D., Dean, Los Angeles.....	Sept. 20	June 14	5
6	Stanford University School of Medicine, San Francisco 1.....	177	14	47	...	634,394	...	...	...	...	47	357	360	360	360	Paul S. McKibben, Ph.D., Dean.....	Oct. 4 ^e	June 13	6
7	COLORADO University of Colorado School of Medicine, Denver 2.....	206	14	45	2	287,861	...	...	...	...	22	211	221	181	191	Maurice H. Rees, M.D., Dean.....	Sept. 25 ^a	June 11	7
8	CONNECTICUT Yale University School of Medicine, New Haven.....	182	15	37	1	162,655	...	...	...	...	36	505	500	500	520	Milton C. Winternitz, M.D., Dean.....	Sept. 25	June 13	8
9	DISTRICT OF COLUMBIA Georgetown University School of Medicine, Washington.....	391	...	122	...	486,869	...	...	...	...	109	460	435	420	375	William Gerry Morgan, M.D., Dean.....	Sept. 21	June 11	9
10	George Washington University School of Medicine, Washington.....	272	20	60	4	486,869	...	...	...	...	34	491	491	491	476	Earl B. McKinley, M.D., Dean.....	Oct. 2	June 2	10
11	Howard University College of Medicine, Washington.....	198	6	42	...	486,869	...	...	...	...	50	269	269	259	266	Numa P. G. Adams, M.D., Dean.....	Oct. 2	June 8	11
12	GEORGIA Emory University School of Medicine, Atlanta.....	219	...	32	...	300,691	...	...	...	...	40	390	390	390	390	Russell H. Oppenheimer, M.D., Dean.....	Sept. 27	June 11	12
13	University of Georgia School of Medicine, Augusta 2.....	153	3	38	...	60,342	...	...	...	...	12	105	100	100	100	William Lorenzo Moss, M.D., Dean.....	Sept. 25	June 4	13
14	ILLINOIS Loyola University School of Medicine, Chicago 1.....	429	21	109	5	5,376,438	...	...	...	...	89	326	409	322	298	Louis D. Moorhead, M.D., Dean.....	Oct. 2 ^a	June 16	14
15	Northwestern University Medical School, Chicago 1.....	335	121	3	83	4,376,438	...	...	...	...	410	365	365	365	365	Irving S. Cutter, M.D., Dean.....	Oct. 3	June 14	15
16	University of Chicago, Rush Medical College 1.....	309	23	120	3	5,376,438	...	...	...	...	125	...	...	...	...	Ernest E. Irons, M.D., Dean.....	Oct. 2 ^a	June 12	16
17	University of Chicago, The School of Medicine of the Division of the Biological Sciences 1.....	298	26	16	2	3,376,438	...	...	...	...	18	375	375	375	375	B. C. H. Harvey, M.D., Dean of Medical Students.....	Oct. 2	June 13	17
18	University of Illinois College of Medicine, Chicago 1,2.....	611	26	115	3	3,376,438	...	...	...	...	105	293	290	290	290	David John Davis, M.D., Dean.....	Oct. 2	June 8	18
19	INDIANA Indiana University School of Medicine, Bloomington-Indianapolis 2.....	439	20	66	6	364,161	...	...	...	...	270	187	186	182	177	Burton D. Myers, M.D., Dean, Bloomington.....	Sept. 12	June 11	19
20	IOWA State University of Iowa College of Medicine, Iowa City 2.....	360	13	88	5	15,340	...	...	...	...	45	192	192	192	207	Willis Dew Gatch, M.D., Dean, Indianapolis.....	Sept. 25	June 4	20
21	KANSAS University of Kansas School of Medicine, Lawrence-Kansas City 2.....	276	12	60	1	121,857	...	...	...	...	37	162	154	155	150	H. R. Wahl, M.D., Dean, Kansas City.....	Sept. 21 ^a	June 11	21
22	KENTUCKY University of Louisville School of Medicine, Louisville.....	339	9	85	2	397,745	...	...	...	...	57	365	365	370	380	John Walker Moore, M.D., Dean.....	Sept. 14	June 2	22
23	LOUISIANA Louisiana State University Medical Center, New Orleans 1,2,4.....	165	6	...	...	458,762	...	...	...	...	149	92	92	92	92	Arthur Vidrine, M.D., Dean.....	Sept. 20	June 4	23
24	Tulane University of Louisiana School of Medicine, New Orleans.....	430	15	98	6	458,762	...	...	...	...	41	350	340	325	355	Charles Casady Bass, M.D., Dean.....	Sept. 22	June 8	24
25	MARYLAND Johns Hopkins University School of Medicine, Baltimore.....	257	32	67	5	804,874	...	...	...	...	72	611	610	610	610	Alan M. Chesney, M.D., Dean.....	Oct. 3	June 12	25
26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore 2.....	401	5	84	1	804,874	...	...	...	...	47	335	375	375	399	J. M. H. Rowland, M.D., Dean.....	Sept. 22	June 6	26
27	MASSACHUSETTS Boston University School of Medicine, Boston.....	222	20	47	6	781,188	...	...	...	...	176	491	421	396	400	Alexander S. Begg, M.D., Dean.....	Sept. 21	June 11	27
28	Harvard University Medical School, Boston.....	519	120	...	...	781,188	...	...	...	...	195	480	490	400	400	David L. Edsall, M.D., Dean.....	Sept. 23	June 21	28
29	Tufts College Medical School, Boston.....	444	18	113	4	781,188	...	...	...	...	50	412	407	407	417	A. Warren Stearns, M.D., Dean.....	Sept. 27	June 18	29
30	MICHIGAN University of Michigan Medical School, Ann Arbor 2.....	442	43	116	16	26,944	...	...	...	...	103	290	295	295	292	Arthur C. Curtis, M.D., Secretary.....	Sept. 25	June 8	30
31	Detroit College of Medicine and Surgery, Detroit 1,2.....	316	8	64	1	1,568,662	...	...	...	...	56	275	275	275	275	W. H. MacCracken, M.D., Dean.....	Sept. 28	June 22	31
32	MINNESOTA University of Minnesota Medical School, Minneapolis 1,2.....	464	24	114	11	464,356	...	...	...	...	125	243	243	243	243	Ellas P. Lyon, M.D., Dean.....	Oct. 2 ^a	June 15	32
33	MISSISSIPPI University of Mississippi School of Medicine, Columbia* 2.....	83	3	...	...	14,067	...	...	...	...	27	170	150	...	...	Dudley S. Conley, M.D., Dean.....	Sept. 11	June 6	33
34	St. Louis University School of Medicine, St. Louis.....	324	13	92	1	821,960	...	...	...	...	85	395	390	390	423	Alphonse M. Schwittalle, S.J., Ph.D., Dean.....	Sept. 20	June 1	34
35	Washington University School of Medicine, St. Louis.....	324	13	92	1	821,960	...	...	...	...	73	434	419	419	424	W. McKim Marriott, M.D., Dean.....	Sept. 23	June 12	35
36	NEBRASKA Creighton University School of Medicine, Omaha.....	307	8	70	2	214,006	...	...	...	...	66	393	393	348	346	John J. McInerney, S.J., Acting Dean.....	Sept. 21	June 7	36
37	University of Nebraska College of Medicine, Omaha.....	329	9	72	2	214,006	...	...	...	...	32	217	212	212	212	C. W. M. Poynter, M.D., Dean.....	Sept. 18	June 4	37
38	NEW HAMPSHIRE Dartmouth Medical School, Hanover.....	38	...	...	...	3,043	...	...	...	...	25	410	400	...	...	John P. Bowler, M.D., Dean.....	Sept. 21	June 19	38

NEW YORK

10 Albany Medical College, Albany.....	127,413	118	1	29	1	23	136	455	420	405	405	Thomas Ortlow, M.D., Dean.....	Sept. 25	June 11	41
11 Long Island College, Brooklyn.....	2,560,401	411	10	58	1	27	277	545	560	530	569	Adam M. Miller, A.M., Dean.....	Oct. 2	June 5	41
12 Long Island College, Brooklyn.....	573,070	208	14	62	2	29	299	527	522	517	527	Edward W. Koch, M.D., Dean.....	Oct. 2	June 13	42
13 Long Island College, Brooklyn.....	4,231,691	378	35	81	0	50	693	540	525	525	545	Willard C. Rappley, M.D., Dean.....	Sept. 27	June 5	43
14 Cornell University Medical College, Ithaca-New York.....	4,211,691	241	29	48	7	53	285	510	500	510	525	G. Cunby Robinson, M.D., Director, New York.....	Sept. 18	June 7	44
15 New York Homoeopathic Medical College and Flower Hosp., New York.....	4,211,691	239	9	65	3	..	169	540	530	530	530	Glaude A. Burdett, M.D., Dean.....	Sept. 18	June 5	45
16 New York University and Bellevue Hospital Medical College, New York.....	4,211,691	482	29	113	0	118	374	545	536	517	538	John Wyckoff, M.D., Dean.....	Sept. 13	June 13	46
17 University of Rochester School of Medicine, Rochester.....	328,132	166	8	35	1	34	199	400	400	400	400	George Hoyt Whipple, M.D., Dean.....	Sept. 18	June 16	47
18 Syracuse University College of Medicine, Syracuse.....	209,336	194	4	39	1	19	191	500	500	500	510	H. G. Weiskotten, M.D., Dean.....	Sept. 28	June 4	48
19 University of North Carolina School of Medicine, Chapel Hill * 2.....	2,690	62	5	..	..	..	12	270	250	..	..	I. H. Manning, M.D., Dean.....	Sept. 22	June 7	49
20 Duke University School of Medicine, Durham 1.....	52,607	157	8	15	..	6	69	430	420	450	430	Wilbert C. Davidson, M.D., Dean.....	Oct. 2 nd	June 7	49
21 Wake Forest College School of Medicine, Wake Forest *.....	1,536	50	..	..	..	..	14	220	225	..	..	Thurman D. Kitchin, M.D., Dean.....	Sept. 12	May 31	51
22 University of North Dakota School of Medicine, Grand Forks * 2.....	17,112	58	..	..	..	..	13	73	75	..	..	H. E. French, M.D., Dean.....	Sept. 10	June 12	52
23 University of Cincinnati College of Medicine, Cincinnati 1, 2.....	431,160	202	11	63	4	59	275	300	270	200	300	Arthur C. Bachmeyer, M.D., Dean.....	Sept. 23	June 16	53
24 Western Reserve University School of Medicine, Cleveland.....	900,459	234	15	55	6	61	258	442	435	415	425	Torald Sollmann, M.D., Dean.....	Sept. 14	June 13	54
25 Ohio State University College of Medicine, Columbus 2.....	200,361	349	10	82	4	71	129	106	186	156	196	J. H. J. Upham, M.D., Dean.....	Oct. 3	June 13	55
26 University of Oklahoma School of Medicine, Oklahoma City 2.....	185,369	239	16	52	4	48	138	129	95	53	25	Lewis Jefferson Moorman, M.D., Dean.....	Sept. 18	June 4	56
27 University of Oregon Medical School, Portland 2.....	301,815	218	17	48	3	51	186	260	255	250	250	Richard B. Dillehunt, M.D., Dean.....	Oct. 3	June 11	57
28 Hahnemann Medical College and Hospital of Philadelphia.....	1,920,901	469	..	108	..	72	301	405	402	462	375	William A. Pearson, M.D., Dean.....	Oct. 2	June 7	58
29 Jefferson Medical College, Philadelphia.....	1,920,901	372	14	100	..	108	217	451	436	425	425	Ross W. Patterson, M.D., Dean.....	Sept. 27	June 1	59
30 University of Pennsylvania School of Medicine, Philadelphia.....	1,920,901	449	15	210	9	69	292	453	425	425	455	William N. Parkerson, M.D., Dean.....	Sept. 27	June 14	60
31 University of Pennsylvania School of Medicine, Philadelphia.....	1,920,901	506	16	132	6	120	282	500	510	510	510	William Penner, M.D., Dean.....	Sept. 27	June 20	61
32 Woman's Medical College of Pennsylvania, Philadelphia.....	1,920,901	138	..	..	..	27	64	388	407	432	454	Martha Tracey, M.D., Dean.....	Sept. 30	June 6	62
33 University of Pittsburgh School of Medicine, Pittsburgh.....	662,817	254	8	60	2	48	234	415	400	400	410	R. R. Huggins, M.D., Dean.....	Sept. 25	June 6	63
34 Medical College of the State of South Carolina, Charleston.....	62,265	148	2	34	1	21	80	275	280	285	285	Robert Wilson, M.D., Dean.....	Sept. 28	June 7	64
35 University of South Dakota School of Medicine, Vermillion * 2.....	2,850	44	1	..	..	..	10	100	100	..	..	J. C. Ohlman, M.D., Administrative Head.....	Sept. 29	June 11	65
36 University of Tennessee College of Medicine, Memphis 2.....	123,146	401	4	105	..	45	292	260	240	220	255	O. W. Hyman, Ph.D., Dean.....	Sept. 28 th	June 9	66
37 Meharry Medical College, Nashville.....	123,866	164	5	24	2	33	56	270	250	270	270	John I. Muller, M.D., President.....	Oct. 2	May 31	67
38 Vanderbilt University School of Medicine, Nashville.....	133,866	177	14	40	2	43	303	315	315	315	320	Walter S. Leathers, M.D., Dean.....	Sept. 26	June 13	68
39 Baylor University College of Medicine, Dallas.....	202,475	338	10	72	3	18	131	312	297	282	287	Walter H. Mouraud, M.D., Dean.....	Oct. 2	May 28	69
40 University of Texas School of Medicine, Galveston.....	32,938	317	17	69	1	45	57	80	82	71	84	George E. Bethel, M.D., Dean.....	Oct. 2	May 31	70
41 University of Utah School of Medicine, Salt Lake City *.....	140,367	63	2	..	..	..	25	190	200	..	..	L. L. Delnes, M.D., Dean.....	Sept. 25	June 2	71
42 University of Vermont College of Medicine, Burlington 2.....	24,789	111	9	34	4	21	68	300	300	300	300	J. N. Jenne, M.D., Dean.....	Sept. 15	June 18	72
43 University of Virginia Department of Medicine, Charlottesville 2.....	15,245	241	0	58	1	24	69	377	355	330	325	J. Carroll Flippin, M.D., Dean.....	Sept. 14	June 12	73
44 Medical College of Virginia, Richmond.....	182,429	335	11	85	2	43	113	307	357	292	322	Lee E. Sutton, Jr., M.D., Dean.....	Sept. 12	May 29	74
45 West Virginia University School of Medicine, Morgantown * 2.....	16,186	123	8	..	..	..	25	115	115	..	..	John N. Simpson, M.D., Dean.....	Sept. 11	June 12	75
46 University of Wisconsin Medical School, Madison 2.....	57,899	291	22	49	1	50	131	150	130	103	143	Charles R. Burdett, M.D., Dean.....	Sept. 20	June 18	76
47 Marquette University School of Medicine, Milwaukee 2.....	578,249	272	7	69	1	52	169	389	379	319	364	Eben J. Curry, M.D., Dean.....	Oct. 2	June 13	77
48 University of Alberta Faculty of Medicine, Edmonton, Alta.....	79,197	132	12	14	1	5	89	175	225	225	225	Alun C. Rankin, M.D., Dean.....	Sept. 25	May 15	78
49 University of Alberta Faculty of Medicine, Winnipeg, Man. 1.....	217,387	226	20	36	6	6	127	276	266	276	276	A. T. Mathers, M.D., Dean.....	Sept. 21	May 25	79
50 Dalhousie University Faculty of Medicine, Halifax, N.S. 1.....	69,275	131	4	29	..	15	68	312	312	317	302	H. G. Grant, M.D., Dean.....	Sept. 12	May 15	80
51 Queen's University Faculty of Medicine, Kingston, Ont. 1.....	53,449	301	..	46	..	..	56	175	185	185	210	Frederick Etherington, M.D., Dean.....	Sept. 21	May 23	81
52 University of Western Ontario Faculty of Medicine, London, Ont. 1.....	71,148	123	9	33	4	10	75	200	205	205	235	A. G. Macdonald, M.D., Dean.....	Sept. 21	June 6	82
53 University of Toronto Faculty of Medicine, Toronto, Ont. 1.....	67,215	171	07	17	10	28	365	250	250	250	250	A. G. Macdonald, M.D., Dean.....	Sept. 20	June 10	83
54 McGill University Faculty of Medicine, Montreal, Que. 1.....	818,278	164	11	49	4	31	108	363	363	363	363	Charles E. Lachapelle, M.D., Dean.....	Sept. 20	May 1	84
55 University of Montreal Faculty of Medicine, Montreal, Que. 1.....	130,258	163	1	46	..	40	88	160	170	160	160	Arthur Ross, M.D., Dean.....	Sept. 17	May 15	85
56 Laval University Faculty of Medicine, Quebec.....	130,258	253	..	47	..	..	12	190	120	..	..	W. N. Lindsay, M.D., Dean.....	Sept. 22	May 31	86
57 University of Saskatchewan School of Medicine, Saskatoon, Sask. *.....	42,291	50	2	..	..	..	..	..	..	..	..	..	..	..	87

* Gives only the first two years of the medical course.

† The population of the following cities is: Berkeley, \$2,100; Loma Linda, 2,500; Bloomington, 18,257; Lawrence, 13,726; Ithaca, 20,068.

‡ Hospital internship required for graduation. See table 5 for the fifth year registration.

§ The following universities make an additional charge for non-residents: Arkansas, \$100; California, \$300; Colorado, \$100; Georgia, \$200; Idaho, \$100; Illinois, \$75 first year, \$75 next three years; Iowa, \$20; Kansas, \$50; Louisiana State, \$300; Maryland, \$100; Michigan, \$100; Detroit, nonresidents of Detroit, \$100, nonresidents

of Michigan, \$125; Minnesota, \$25 per quarter; Missouri, \$30; North Carolina, \$100; North Dakota, \$90; Cincinnati, nonresidents of Cincinnati, \$30; Ohio State, \$150; Oklahoma, \$200; Oregon, \$80; South Dakota, \$30; Tennessee, for residents of the state the charge is reduced \$30 each quarter; Vermont, \$15 (an activity fee of \$30 is charged all students not holding academic degrees); Virginia, \$30; Medical College of Virginia, \$100; West Virginia, \$250; Wisconsin, \$200.

3. See Description of Medical Colleges, page 691, for fifth and sixth year fees.

4. Approved as Class A medical schools, June 12, 1933, and Feb. 12, 1934, respectively.

5. At a meeting of the Council on Medical Education and Hospitals, Feb. 12, 1933, the University of Mississippi School of Medicine was removed from its list of Class A medical schools with the proviso that other institutions may accept full credit for the work done at Mississippi by students who were at that time regularly enrolled.

6. Students admitted at different times of the year: Kansas, February 7; Minnesota, January 8; Tennessee, January 2 and March 22; Students admitted to advanced standing: California, January; Stanford, January 2 and April 2; Colorado, January 2 and March 20; Loyola, if vacancies exist, students will be admitted in January; Rush, April 2; Duke, junior students will be admitted in June.

(Continued from page 679)

The Association of American Medical Colleges reports that there were 31,429 applications for admission to the freshman class in 1932, representing 12,280 applicants, and of these 7,357 were accepted and 4,923

senior year, but all graduates are required to spend at least two years in hospital or laboratory work after graduation. These schools and the number of students interning during 1932-1933 are contained in table 5. There were 1,224 such individuals, 47 more than in

TABLE 4.—Students by Classes

Name of College	Enrolled During 1932-1933					Name of College	Enrolled During 1932-1933				
	1st	2d	3d	4th	Total		1st	2d	3d	4th	Total
University of Alabama School of Medicine....	61	46	..	..	107	Columbia University College of Physicians and Surgeons	115	108	99	91	413
University of Arkansas School of Medicine...	57	42	53	45	197	Cornell Un	71	67	58	57	253
University of California School of Medicine...	60	54	59	58	231	New York	96	67	76	69	308
University of Chicago School of Medicine...	104	106	88	91	389	Flower	..	..	..	..	..
University of Colorado School of Medicine...	54	37	36	30	157	New York University, University and Bellevue	142	127	116	121	511
Stanford University School of Medicine.....	51	52	48	40	191	Hospital Medical College.....	47	48	47	37	174
University of Colorado School of Medicine....	73	50	50	47	220	University of Rochester School of Medicine...	32	51	55	40	198
Yale University School of Medicine.....	54	63	40	40	197	Syracuse University College of Medicine.....	33	34	..	..	67
Georgetown University School of Medicine...	160	150	145	136	591	University of North Carolina School of Medi-	50	60	40	15	365
George Washington University School of Med-	80	76	73	63	292	cine	30	29	..	..	59
..	54	60	48	42	204	Duke University School of Medicine.....	90	77	72	74	313
..	61	47	59	52	219	Wake Forest College School of Medicine....	79	74	55	61	269
..	40	39	41	38	158	University of North Dakota School of Medi-	102	85	88	90	365
..	148	103	102	97	450	cine	78	60	61	56	255
..	126	120	159	145	550	University of Cincinnati College of Medicine..	66	55	61	53	235
..	..	..	..	..	332	Western Reserve University School of Medi-	142	114	98	115	469
..	..	..	..	..	264	cine	120	138	144	140	542
of the Division of the Biological Sciences*	192	145	147	153	637	University of Oklahoma School of Medicine...	116	117	118	113	464
University of Illinois College of Medicine.....	131	105	116	107	459	University of Oregon Medical School.....	135	115	132	140	522
Indiana University School of Medicine.....	127	81	72	93	373	Hahnemann Medical College and Hospital of	44	40	22	30	136
State University of Iowa College of Medicine	82	83	67	56	288	Philadelphia	67	66	67	62	262
University of Kansas School of Medicine....	95	69	98	86	348	Jefferson Medical College of Philadelphia....	40	37	37	36	150
University of Louisville School of Medicine...	66	50	27	28	171	Temple University School of Medicine.....	30	15	..	..	45
Louisiana State University Medical Center...	134	109	125	106	474	University of Tennessee College of Medicine..	151	82	64	108	405
Tulane University of Louisiana School of	71	72	73	73	289	Meharry Medical College	56	41	36	38	171
Medicine	121	95	105	85	406	Vanderb	50	47	51	43	191
Johns Hopki	70	65	54	53	242	Baylor	117	89	67	75	348
University o	125	127	134	133	519	University of Texas School of Medicine.....	108	85	70	71	334
and College	124	114	101	123	462	University of Utah School of Medicine.....	35	30	..	..	65
Boston Univ	129	120	100	136	485	University of Vermont College of Medicine...	44	34	34	38	150
Harvard University Medical School.....	100	83	69	72	324	University of Virginia Department of Medicine	72	58	58	59	247
Tufts College Medical School.....	83	130	117	140	470	Medical College of Virginia.....	83	71	101	91	346
University of Michigan Medical School.....	22	23	..	..	45	West Virginia University School of Medicine.	81	59	..	..	140
Detroit College of Medicine and Surgery...	45	41	..	..	86	University of Wisconsin Medical School.....	121	87	56	49	313
University of Minnesota Medical School.....	173	119	121	119	532	Marquette University School of Medicine.....	92	65	68	51	270
University of Mississippi School of Medicine...	82	73	88	94	337	Totals for 1933.....	6,426	5,479	5,017	4,948	22,466
University of Missouri School of Medicine....	102	73	68	72	315	Totals for 1932.....	6,250	5,162	4,932	4,885	22,135
St. Louis University School of Medicine.....	100	79	87	72	338						
Washington University School of Medicine...	22	16	..	..	38						
Creighton University School of Medicine....	37	34	20	30	121						
University of Nebraska College of Medicine...	114	97	112	101	424						
Dartmouth Medical School.....	82	70	64	66	282						
Albany Medic	..	..	..	..	..	
Long Island	..	..	..	..	..	
University of	..	..	..	..	..	

* School operated on the quarter system, and students are not promoted by classes.

refused.⁵ However, as already indicated, only 6,426 actually completed the freshman year, exclusive of the University of Chicago enrolment.

STUDENT INTERNS

Sixteen medical schools require a year's internship in an approved hospital or laboratory work as a pre-

TABLE 5.—Students Serving Internships During the Session 1932-1933 as a Prerequisite for Graduation

University of California Medical School.....	54
College of Medical Evangelists.....	70
University of Southern California School of Medicine.....	7
Stanford University School of Medicine.....	49
Loyola University School of Medicine.....	114
Northwestern University Medical School.....	146
University of Chicago, Rush Medical College.....	125
University of Chicago, The School of Medicine of the Division of	18
the Biological	147
University of Illin	65
Detroit College of	166
University of Min	18*
Duke University S	67
University of Cinc	60
Marquette Univers.	40
University of Manitoba Faculty of Medicine.....	29
Dalhousie University Faculty of Medicine.....	49
University of Montreal Faculty of Medicine.....	1,224
Total.....	1,224

* Degrees are awarded prior to internship.

requisite for graduation. Duke University School of Medicine grants the degree after the completion of the

the previous session. The University of Oklahoma School of Medicine, which made the internship a requirement to affect the seniors of 1932-1933, has

TABLE 6.—Colleges, Students and Graduates

Year	No. Colleges	Students*	Graduates
1905.....	160	26,147	5,606
1910.....	131	21,326	4,440
1915.....	96	14,891	3,536
1920.....	85	13,798	3,047
1921.....	83	14,466	3,186
1922.....	81	15,635	2,520
1923.....	80	16,960	3,120
1924.....	79	17,728	3,562
1925.....	80	18,200	3,974
1926.....	79	18,840	3,962
1927.....	80	19,662	4,035
1928.....	80	20,545	4,262
1929.....	76	20,578	4,446
1930.....	76	21,597	4,563
1931.....	76	21,982	4,735
1932.....	76	22,135	4,836
1933.....	77	22,466	4,895

* Includes figures for schools offering preclinical courses also.

rescinded its action. Further information is given in Part III, Education of Interns and Residents in Approved Hospitals.

MEDICAL COLLEGES, STUDENTS AND GRADUATES

The total number of undergraduate medical students, as shown in table 6, was 22,466, an increase of 331 over last session. This is the largest number of stu-

dents enrolled since 1905, when 26,147 were in attendance at the 160 medical schools then existing. Also included in these are the number of students enrolled in schools offering only the preclinical courses. Not included in the total number of students for 1933 are 38 part-time, 812 postgraduate and 258 special students.

The number of medical colleges in each five year period from 1905 to 1920, and for each year since, as well as the number of students and graduates, is also shown in this table. The largest number of medical colleges existed in 1906, when there were 162.

Again, referring to table 6, it will be noted that the total number of graduates was 4,895, a decrease of 41 from the preceding year. The gradual increase in the

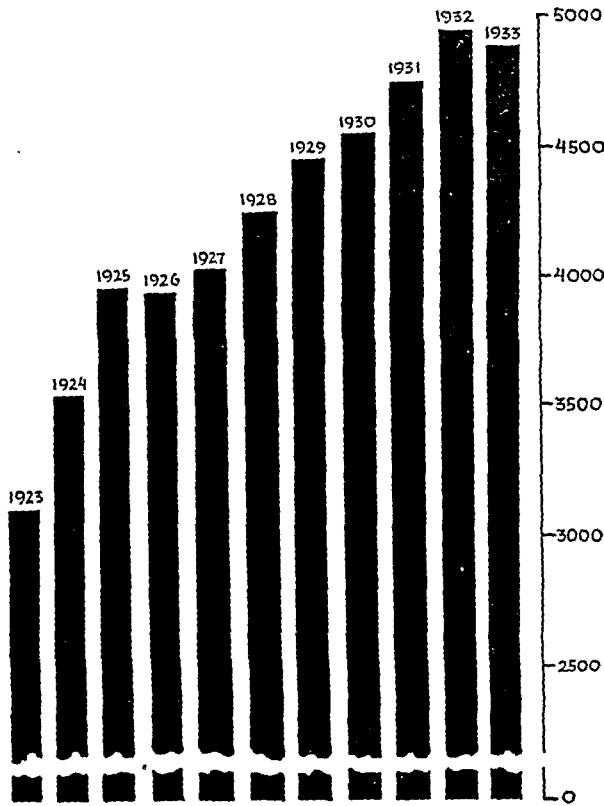


Chart 2.—Increase of medical graduates in the United States.

number of graduates since 1923 is shown graphically in chart 2. While the number of graduates in 1932 was slightly lower than for the preceding session, they represent over 50 per cent more than the loss by death in the medical profession each year. The number of deaths of physicians of the United States for the calendar year 1932 was approximately 3,200. The ratio of physicians to population is steadily increasing. A complete presentation of the facts bearing on the numerical sufficiency of the medical profession is given in the Final Report of the Commission on Medical Education, page 93.

TUITION AND OTHER FEES

In table 2, pages 680-681, is given the amount charged by the various medical colleges per annum for tuition, matriculation, laboratory and graduation fees. In table 7, the eighty-seven medical colleges of the United States and Canada have been grouped according to the amount of fees charged. Four colleges have fees of less than \$100 a year. These were the State Uni-

versities of Louisiana, North Dakota, Oklahoma and Texas. The first three schools named charge an additional fee of \$300, \$90 and \$200, respectively, for non-residents, while the University of Texas will admit only residents. The ten colleges having fees over \$500 are Yale, Johns Hopkins, Long Island, Buffalo, Columbia, Cornell, New York Homeopathic, University and Bellevue, Syracuse and the University of Pennsylvania. The lowest charge was that of the University of Oklahoma, with an average fee of \$72, and the highest \$611, by Johns Hopkins. The University of Oklahoma, as noted, has a nonresident fee of \$200. There were twenty-seven universities which made an additional charge for nonresidents ranging from \$50 by the Universities of Kansas, Missouri, Cincinnati, South Dakota and Virginia to \$300 exacted by the Universities of California and Louisiana State. The fees for nonresidents are shown in the footnote to table 2, pages 680-681.

In 1910, several medical schools were still paying all expenses—and a few making profits—from students' fees. At present, however, no medical school can maintain extensive laboratories, pay the essential salaries to teachers and properly teach modern medicine without an income larger than that derived from students' fees. As the cost of conducting medical schools has increased, there has also been an increase in the fees charged. Provision, however, has been made for scholarships and loan funds for the benefit of deserv-

TABLE 7.—College Fees, 1932-1933

	Colleges
Under \$100	4
\$100 to \$200	14
200 to 300	23
300 to 400	20
400 to 500	16
Over \$500	10
Totals	87

ing students. It is practically impossible for a student to endeavor to be self supporting while studying medicine. There were 721 scholarships reported by forty-two schools and loan funds by fifty-two.

In addition to student fees, many of the schools received donations from various sources throughout the session, such as gifts, bequests and endowments, as well as their usual appropriations from state and private enterprises.

REPETITION IN COURSES

Statistics regarding colleges in which students are repeating either an entire year or certain courses for scholastic reasons has appeared in the Educational Number of THE JOURNAL each year since 1931. The study has been continued, and the results collected are herewith presented in table 8, recorded by percentages. Although it might be assumed that those schools which have an average of 5 per cent or less are maintaining reasonable academic standards, it has been found that in some schools the methods of promotion are lax and a student is promoted who would be conditioned in another school maintaining a higher standard. Furthermore, in five schools, as shown in table 9, students are never required to repeat the year, for scholastic reasons. At Yale and Minnesota, where promotions are based on comprehensive examination, a student who fails to pass this examination cannot proceed with his studies until he passes, but he is not required to repeat work. It has been found generally

that a student who thus fails reviews his work during the following months and then presents himself for reexamination and if successful proceeds with his course. This is particularly true at Minnesota, which is operated on the quarter system or continuous session plan. A student need only drop out of school for a quarter to review his work. At the University of Ten-

TABLE 8.—Percentages of Classes Repeating Courses in Session 1932-1933 for Scholarship

Name of College	1st Year	2d Year	3d Year	4th Year	Total
University of Alabama School of Medicine.....	1.6	4.3	...	...	2.8
University of Arkansas School of Medicine.....	12.3	2.4	...	...	4.1
University of California Medical School.....	...	1.9	1.7	...	0.9
College of Medical Evangelists.....	1.9	...	...	...	0.8
Stanford University School of Medicine.....	...	...	4.2	...	1.0
University of Colorado School of Medicine.....	8.2	4.0	...	...	3.6
Howard University College of Medicine.....	1.9	3.3	2.1	...	2.0
University of Georgia School of Medicine.....	...	2.6	...	...	0.6
Loyola University School of Medicine.....	4.1	3.9	...	...	2.2
Northwestern University Medical School.....	0.8	0.8	...	...	0.4
University of Illinois College of Medicine.....	1.6	1.4	...	...	0.8
State University of Iowa College of Medicine.....	8.7	3.7	...	...	3.8
University of Kansas School of Medicine.....	...	6.0	...	...	1.7
University of Louisville School of Medicine.....	8.4	4.3	2.0	...	3.7
Louisiana State University Medical Center.....	10.6	2.0	7.5	...	5.8
Tulane University of Louisiana School of Medicine.....	4.5	0.9	...	...	1.5
University of Maryland School of Medicine and College of Physicians and Surgeons.....	4.1	1.1	1.9	...	2.0
Boston University School of Medicine.....	1.4	...	...	...	0.6
Harvard University Medical School.....	...	0.8	1.5	...	0.4
Tufts College Medical School.....	1.6	...	...	...	0.4
University of Michigan Medical School.....	4.7	5.0	...	...	2.5
Detroit College of Medicine and Surgery.....	9.0	...	...	...	2.8
University of Missouri School of Medicine.....	...	2.4	...	...	1.2
St. Louis University School of Medicine.....	2.3	1.7	...	...	1.1
Washington University School of Medicine.....	2.4	1.4	...	...	0.9
Creighton University School of Medicine.....	2.0	...	...	...	0.6
University of Nebraska College of Medicine.....	5.0	...	...	...	1.5
Long Island College of Medicine.....	3.5	1.0	0.9	...	1.4
University of Buffalo School of Medicine.....	...	1.4	...	...	0.4
Columbia University College of Physicians and Surgeons.....	1.7	...	...	...	0.5
New York Homeopathic Medical College.....	9.4	7.5	2.6	...	5.2
Wake Forest College School of Medicine.....	3.3	...	...	...	1.7
University of North Dakota School of Medicine.....	2.4	6.9	...	...	5.2
Western Reserve University School of Medicine.....	3.8	2.7	...	...	1.9
Ohio State University College of Medicine.....	2.9	...	...	...	0.8
University of Oklahoma School of Medicine.....	6.4	...	...	...	2.0
University of Oregon Medical School.....	4.5	3.6	3.3	1.9	3.4
Hahnemann Medical College and Hospital of Philadelphia.....	...	0.9	...	...	0.2
Temple University School of Medicine.....	0.9	0.9	...	...	0.4
University of Pennsylvania School of Medicine.....	0.7	1.7	...	...	0.6
Woman's Medical College of Pennsylvania.....	13.6	2.5	...	...	5.1
University of Pittsburgh School of Medicine.....	...	1.5	3.0	6.5	2.7
Medical College of the State of South Carolina.....	...	...	10.8	...	2.7
University of South Dakota School of Medicine.....	10.0	...	...	...	6.7
Meharry Medical College.....	10.7	...	5.6	...	4.7
Baylor University.....	3.4	12.4	...	...	4.3
University of Texas.....	5.6	3.5	...	...	2.7
University of Utah.....	...	3.3	...	...	1.5
University of Vermont.....	2.3	...	2.6	1.3	...
University of Virginia.....	4.2	3.4	1.7	3.4	3.2
Medical College of Virginia.....	3.6	...	1.0	2.2	1.7
West Virginia.....	11.1	...	...	...	6.4
University of Wisconsin.....	4.1	...	1.8	...	1.9
Marquette University School of Medicine.....	...	3.1	...	...	0.7
University of Alberta Faculty of Medicine.....	4.4	5.1	4.0	...	3.0
University of Manitoba Faculty of Medicine.....	20.6	1.9	1.7	...	6.1
Dalhousie University Faculty of Medicine.....	10.3	11.1	...	...	5.9
Queen's University Faculty of Medicine.....	2.0	6.5	4.4	...	2.7
University of Western Ontario Medical School.....	2.7	...	...	...	0.8
University of Toronto Faculty of Medicine.....	12.6	5.2	13.4	1.7	6.6
University of Toronto Faculty of Medicine.....	3.8	3.1	2.0	1.1	2.1
University of Toronto Faculty of Medicine.....	5.4	6.4	...	...	2.5
University of Toronto Faculty of Medicine.....	7.0	11.3	2.5	...	4.7
University of Saskatchewan School of Med. Sciences.....	20.0	...	...	...	9.6

* Fifth year, 4.0.

† Sixth year, 1.9.

‡ Fifth year, 2.7; sixth year, 0.8.

nessee, which also operates on the quarter plan, students are not required to repeat the work of an entire year but only of a quarter's work unless he fails repeatedly. The medical schools of the University of Chicago require students to repeat in residence only the subjects in which they were conditioned.

The greatest number of students who are repeating for scholastic reasons are, of course, students who have failed in the first year of medicine. Figures in the last two years are relatively small. There were

students repeating courses for poor scholarship in sixty-four of the eighty-seven schools, of which thirteen had students repeating only in the first year; twenty in the first and second years; seven in the second year only; ten in the first, second and third years; two in the second and third years; four in all four years; two in the first and fourth years; two in the third year only; one in the last three years; two in the first and third years, and one in the first, third and fourth years.

These students, in the majority of cases, were repeating courses in the same institution. If a student is not given another chance in his own school it is almost impossible for him to obtain admission elsewhere.

TABLE 9.—Repetition in Quarter System Schools Session 1932-1933

Name of School	No. of Students Repeating
Yale University School of Medicine.....	11*
University of Chicago, Rush Medical College.....	14†
University of Chicago, The School of Medicine of the Division of the Biological Sciences.....	29‡
University of Minnesota Medical School.....	17‡
University of Tennessee College of Medicine.....	48§
Total.....	119

* Five failed the qualifying examination, and six failed the final examination.

† Repeated subjects or were re-examined.

‡ Seventy-four failed the comprehensive examination of whom the above number repeated the examination.

§ Repeated one or more quarters.

WOMEN IN MEDICINE

During the past year there were 1,056 women studying medicine, or 101 more than the previous year. The percentage of women to all medical students this year is 4.7. There were 214 graduates, 6 more than last year. Of all the women matriculants, 136 were in attendance at the one medical college for women, the Woman's Medical College of Pennsylvania, while 920

TABLE 10.—Women in Medicine

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905.....	1,073	4.1	219	4.0
1910.....	907	4.0	116	2.6
1915.....	392	4.0	92	2.6
1920.....	818	5.8	122	4.0
1925.....	910	5.0	204	5.1
1926.....	935	5.0	212	5.4
1927.....	964	4.9	189	4.7
1928.....	929	4.5	207	4.9
1929.....	925	4.4	214	4.8
1930.....	957	4.4	204	4.5
1931.....	990	4.5	217	4.6
1932.....	957	4.3	208	4.2
1933.....	1,056	4.7	214	4.4

were matriculated in the seventy-seven coeducational colleges in the United States and Canada. From the Woman's Medical College 27 were graduated, while 187 secured their degrees from coeducational institutions. As shown in table 10, the number of women students has been quite constant since 1920, although there has been an increase in the last five years.

NEGROES IN MEDICAL SCHOOLS

The Negro medical students for the session 1932-1933 are recorded by classes in table 11. The totals for 1931-1932 are shown for comparison. There were 428 students and 91 graduates, a decrease of 51 and 31, respectively, over the figures for the previous year. Meharry Medical College was organized in 1876 as a medical college for Negro youth, and at Howard Uni-

versity College of Medicine, organized in 1869, they compose a majority of those in attendance. These two schools graduated the majority of the Negro students.

TABLE 11.—*Negro Students and Graduates*

Name of College	Enrolment by Classes During 1932-1933					Graduates
	1st Year	2d Year	3d Year	4th Year	Totals	
University of California Medical School.....	1	1	1	1	4	..
College of Medical Evangelists.....	52	58	47	41	198	41
Howard University College of Medicine.....	..	..	..	1	1	..
Loyola University School of Medicine.....	..	..	..	1	1	..
University of Chicago, Rush Medical College..	..	..	..	1	1	..
University of Chicago, The School of Medicine of the Division of the Biological Sciences...	2	..	..	1	3	..
University of Illinois College of Medicine.....	..	1	..	1	2	..
Indiana University School of Medicine.....	1	1	1	1	4	1
State University of Iowa College of Medicine..	..	1	..	1	2	1
University of Kansas School of Medicine.....	..	1	..	1	2	..
Tufts College Medical School.....	..	..	1	1	2	1
University of Michigan Medical School.....	..	..	1	1	2	1
Detroit College of Medicine and Surgery.....	..	1	..	1	2	1
Long Island College of Medicine.....	..	1	..	1	2	1
Columbia University College of Physicians and Surgeons.....	1	..	2	..	3	..
New York Homeopathic Medical College and Flower Hospital.....	1	2	..	1	4	1
New York University College of Medicine.....	..	1	..	1	2	..
University of Western Medicine.....	1	1	1	1	4	1
Ohio State University College of Medicine.....	2	..	1	3	6	3
University of Pennsylvania School of Medicine	56	41	36	38	171	33
University of Medicine.....	2	1	..	1	4	2
University of Medicine.....	2	3	..	1	6	2
University of Medicine.....	1	..	..	1	2	..
Total during 1932-1933.....	120	115	94	99	428	91
Total during 1931-1932.....	141	100	113	122	476	122

PHYSICAL THERAPY

Physical therapy is reported as being taught in some form in fifty-four of the schools of this country and Canada, while thirty-one indicate that they offer no

TABLE 12.—*Physical Therapy*

	No. of Schools
No instruction.....	31
Undergraduate instruction—no separate department.....	29
Connected with therapeutics.....	4
Connected with radiology.....	3
Included in department of medicine.....	1
Subdivision of orthopedics.....	1
Department of nervous and mental diseases.....	1
Given at two hospitals connected with schools.....	1
Given to a limited extent.....	1
In conjunction with physical education.....	1
Incident to courses in surgery.....	1
Unspecified.....	15
Undergraduate instruction—separate department.....	6
Undergraduate instruction—not indicated whether separate department.....	1
Undergraduate and graduate instruction—no separate department.....	9
Division of department of medicine.....	1
Connected with orthopedics.....	2
Included department of radiology.....	1
Part of course in therapeutics.....	1
Subdivision of surgery.....	1
In connection with psychiatry.....	1
In university hospital.....	1
Unspecified.....	1
Undergraduate and graduate instruction—separate department.....	7
Graduate instruction—no separate department.....	1
Graduate instruction—no mention made of separate department.....	1
Reported none this year but will give course next college session to undergraduates and probably also graduates..	1
Reported none in medical school but in separate department of hospital.....	1
Total.....	87

instruction whatever. In many of the schools, instruction is given under one of the clinical departments. Several schools offer graduate study but do not give

undergraduate instruction. The results of a survey on this subject can be noted in table 12.

GRADUATES OF MEDICAL SCHOOLS OTHER THAN THOSE OF THE UNITED STATES

Conferences initiated by the Council have considered the problems created by the migration of large numbers of American students to medical schools abroad with the result that the Federation of State Medical Boards of the United States adopted the following resolution:

1. That no American student matriculating in a European medical school subsequent to the academic year 1932-1933 will be admitted to any state medical licensing examination who does not, before beginning such medical study, secure from a state board of medical examiners or other competent state authority a certificate endorsed by the Association of American Medical Colleges or the Council on Medical Education and Hospitals of the American Medical Association showing that he has met the premedical educational requirements prescribed by the aforementioned associations.

2. That no student either American or European matriculating in a European medical school subsequent to the academic year 1932-1933 will be admitted to any state medical licensing examination who does not present satisfactory evidence of premedical education equivalent to the requirements of the Association of American Medical Colleges, and the Council on Medical Education and Hospitals of the American Medical Association, and graduation from a European medical school after a medical course of at least four academic years, and submit evidence of having satisfactorily passed the examination to obtain a license to practice medicine in the country in which the medical school from which he is graduated is located.

TABLE 13.—*Graduates of Medical Faculties of Universities in Countries Other than the United States and Canada Examined by Licensing Boards of the United States and Possessions, 1927-1932, Inclusive*

	1927-1931 Inclusive		1932	
	Number Examined	Percentage Failed	Number Examined	Percentage Failed
AFRICA				
1. University of the Witwatersrand, Johannesburg.....	1	0.0	..	..
AUSTRALIA				
2. University of Melbourne.....	2	0.0	..	..
3. University of Sydney.....	1	0.0	..	..
AUSTRIA				
4. Karl-Franzens-Universität Graz.....	7	37.1	4	75.0
5. Leopold-Franzens-Universität, Innsbruck.....	1	0.0	1	100.0
6. Universität Wien.....	65	33.8	12	25.0
BELGIUM				
7. Université Libre de Bruxelles.....	1	0.0	..	..
8. Universiteit Gent.....	1	100.0	..	..
9. Université de Liège.....	1	0.0	..	..
10. Université Catholique de Louvain.....	2	33.3	2	50.0
CHINA				
11. Hunan-Yale College of Medicine, Changsha.....	1	0.0	..	..
12. Mukden Medical College.....	1	100.0	..	..
13. Peiping Union Medical College.....	1	0.0	..	..
14. Pennsylvania Medical School, Shanghai.....	1	0.0	1	0.0
15. Sun Yü Medical College.....	2	100.0	..	..
COLOMBIA				
16. Universidad de Cartagena.....	..	..	1	0.0
CUBA				
17. Universidad de la Habana.....	18	33.3	4	25.0
DENMARK				
22. Københavns Universitet.....	4	25.0	..	..
DOMINICAN REPUBLIC				
23. Universidad de Santo Domingo.....	..	..	3	33.3
EL SALVADOR				
24. Universidad Nacional, San Salvador.....	2	50.0	..	..
ENGLAND				
25. King's College Hospital Medical School, London.....	..	..	2	0.0
26. Middlesex Hospital Medical School, London.....	..	..	1	0.0
27. University of Durham, Newcastle-upon-Tyne.....	1	0.0	..	..
28. University of Liverpool.....	3	0.0	..	..
29. University of London.....	3	0.0	1	100.0
30. University of Oxford.....	1	0.0	..	..
31. Royal College of Surgeons, England.....	..	..	2	0.0
32. Royal College of Physicians, London, and the Royal College of Surgeons, England, Licentiate of.....	10	0.0	..	..
33. Royal College of Physicians, London, and the Royal College of Surgeons, England, Member of.....	2	50.0	..	..
34. Royal College of Surgeons, Fellow of the.....	1	0.0	..	..

TABLE 13.—*Graduates of Medical Faculties of Universities in Countries Other than the United States and Canada Examined by Licensing Boards of the United States and Possessions, 1927-1932, Inclusive—Continued*

	1927-1931 Inclusive		1932			1927-1931 Inclusive		1932	
	Number Examined	Percentage Failed	Number Examined	Percentage Failed		Number Examined	Percentage Failed	Number Examined	Percentage Failed
FRANCE									
35. Université de Bordeaux.....	4	100.0	1	0.0	97. Escuela Libre de Homeopatía, México.....	6	16.7	..	..
36. Université de Lyon.....	1	0.0	1	0.0	98. Escuela Médico Militar, México.....	3	0.0	1	0.0
37. Université de Montpellier.....	1	0.0	..	..	99. Universidad Nacional, México.....	30	6.7	1	0.0
38. Université de Nancy.....	1	0.0	..	..	100. Escuela de Medicina de Nuevo León, Monterrey.....	4	0.0	..	..
39. Université de Paris.....	21	33.3	8	37.5	101. Escuela de Medicina, Oaxaca.....	1	0.0	..	..
40. Université de Toulouse.....	1	0.0	..	..	102. Escuela de Medicina de San Luis Potosí.....	4	0.0	..	..
41. Université de Strasbourg.....	3	33.3	..	..	NETHERLANDS				
GERMANY									
42. Friedrich-Wilhelms-Universität, Berlin.....	38	33.5	2	100.0	103. Universiteit Van Amsterdam.....	1	100.0	..	..
43. Rheinische Friedrich-Wilhelms-Universität, Bonn.....	6	33.3	..	..	NICARAGUA				
44. Schlesische Friedrich-Wilhelms-Universität, Bres- lau.....	7	85.7	..	..	104. Universidad de Nicaragua.....	1	0.0	..	..
45.	3	33.3	1	100.0	NORWAY				
46.	5	20.0	2	50.0	105. Kongelige Frederiks Universitets, Oslo.....	2	0.0	1	0.0
47.	2	50.0	..	..	POLAND				
48. Hessische Ludwigs-Universität, Gießen.....	1	0.0	..	..	106. Uniwersytetu Lwów.....	4	25.0	2	50.0
49. Georg-August Universität, Göttingen.....	3	0.0	..	..	107. Uniwersytetu Warszawa.....	3	66.7	..	..
50. Universität Greifswald.....	4	75.0	..	..	108. Uniwersytetu Stefana Batorego, Wilnie.....	1	0.0	..	..
51. Hamburgische Universität.....	1	0.0	..	..	PORTUGAL				
52. Universität Heidelberg.....	1	0.0	..	..	109. Universidade do Coimbra.....	4	50.0	..	..
53. Rheinisch-Westfälische Universität, Jena.....	5	60.0	4	25.0	110. Faculdade de Medicina de Lisboa.....	3	0.0	1	0.0
54. Universität, Kiel.....	7	57.1	..	..	111. Faculdade de Medicina do Porto.....	12	75.0	..	..
55. Königsberg.....	12	66.7	..	..	RUMANIA				
56.	10	50.0	2	50.0	112. Universitatea din Bucuresti.....	..	..	2	50.0
57.	18	38.9	1	0.0	113. Universitatea Reg'le Ferdinand I-lea din Cluj.....	5	40.0	1	100.0
58.	2	50.0	..	..	114. Universitatea din Iasi.....	2	0.0	..	..
59.	13	61.5	1	100.0	SCOTLAND				
GREECE									
60. National University of Athens.....	55	78.2	1	100.0	115. University of Aberdeen.....	2	0.0	1	100.0
HONDURAS									
61. Universidad Central de la República de Hon- duras, Tegucigalpa.....	1	0.0	..	..	116. School of Medicine of the Royal Colleges, Edin- burgh.....	1	100.0	..	..
HUNGARY									
62. Magyar Királyi Pázmány Petrus Tudományegye- tem, Budapest.....	30	36.7	3	0.0	117. University of Edinburgh.....	20	0.0	20	15.0
63. Magyar Királyi Tisza-István-Tudományegyetem, Debrecen.....	1	0.0	..	..	118. University of Glasgow.....	6	31.3	..	..
64. Magyar Királyi Erzsébet Tudományegyetem, Pecs.....	5	20.0	2	100.0	119. University of St. Andrews.....	..	..	1	100.0
65. Magyar Királyi Ferencz József Tudományegye- tem, Szeged.....	3	0.0	1	100.0	120. Royal College of Physicians, Edinburgh, Licen- tiate of.....	3	33.3	..	..
IRELAND									
66. Queen's University, Belfast.....	3	33.3	3	33.3	121. Royal College of Physicians, the Royal College of Surgeons, Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, Licen- tiate of.....	..	..	1	100.0
67. National University of Ireland University College, Dublin.....	20	10.0	..	..	122. Royal College of Surgeons, Edinburgh, Licen- tiate of.....	..	..	1	0.0
68. Trinity College, Dublin.....	3	33.3	..	..	123. Royal Faculty of Physicians and Surgeons of Glasgow, Licentiate of.....	3	0.0	..	..
69. Royal College of Surgeons, Licentiate of.....	2	0.0	..	..	SPAIN				
ITALY									
70. Regia Università di Benito Mussolini, Bari.....	1	100.0	..	..	124. Universidad de Barcelona.....	2	0.0	..	..
71. Regia Università di Bologna.....	12	41.7	1	100.0	125. Universidad Central de España, Madrid.....	15	46.7	..	..
72. Regia Università di Cagliari.....	2	50.0	..	..	SWEDEN				
73. Regia Università di Catania.....	4	75.0	1	0.0	126. Kungl. Universitetet i Uppsala.....	1	0.0	..	..
74. Regia Università di Firenze.....	2	100.0	4	25.0	SWITZERLAND				
75. Regia Università di Genova.....	2	50.0	3	66.7	127. Universität Basel.....	2	0.0	..	..
76. Regia Università di Messina.....	2	0.0	..	..	128. Universität Bern.....	10	50.0	3	66.7
77. Regia Università di Modena.....	8	75.0	..	..	129. Université de Genève.....	10	30.0	..	..
78. Regia Università di Napoli.....	176	76.7	26	57.8	130. Université de Lausanne.....	6	33.3	..	..
79. Regia Università di Padova.....	12	75.0	..	..	131. Universität Zürich.....	5	60.0	1	0.0
80. Regia Università di Palermo.....	34	73.5	9	88.9	SYRIA				
81. Regia Università di Pavia.....	7	85.7	1	100.0	132. American University of Beirut.....	9	33.3	..	..
82. Regia Università di Pisa.....	4	75.0	..	..	TURKEY				
83. Regia Università di Roma.....	42	57.1	13	69.2	133. University of Istanbul.....	5	80.0	..	..
84. Regia Università di Siena.....	2	0.0	..	..	UNION OF SOCIALIST SOVIET REPUBLICS				
85. Regia Università di Torino.....	1	100.0	..	..	134. Charkovsky Universitet.....	24	54.2	..	..
JAPAN									
86. Kumamoto Medical College.....	1	100.0	..	..	135. Ekaterinoslav Medical Inst., Dnipropetrovsk.....	2	100.0	..	..
87. Nagasaki Medical.....	1	100.0	..	..	136. Dragomanov Institute, Kiev.....	29	58.6	..	..
88. Osaka Imperial.....	1	0.0	..	..	137. Irkutsk Medical Institute.....	1	0.0	..	..
89. Toho.....	6	100.0	..	..	138. State University of Kazan.....	2	50.0	..	..
90. Keio.....	3	66.7	..	..	139. Medical Institute of Leningrad.....	9	44.4	..	..
91. Japan.....	6	50.0	..	..	140. State Institute of Medical Science, Leningrad.....	8	50.0	..	..
92. Tokyo.....	10	90.0	..	..	141. Moscow State.....	14	71.4	3	33.3
93. Tokyo.....	8	37.5	..	..	142. Odessa State.....	11	63.6	..	..
94. Tokyo Women's Medical College.....	4	50.0	..	..	143. Psycho-Neuro.....	..	..	2	100.0
MEXICO									
95. Universidad Nacion.....	16	43.8	1	0.0	144. North Caucas.....	9	55.6	..	..
96. Escuela de Medicina Merida.....	1	0.0	..	..	145. University of Saratov.....	8	62.5	1	100.0
					146. University of Tomsk.....	12	50.0	1	100.0
					147. Voronej Government University.....	6	33.3	..	..
					YUGOSLAVIA				
					148. Zagrebaskog Universiteta.....	1	0.0	..	..

This policy of the federation has been made effective by individual action on the part of the states. For the purpose of keeping closely in touch with developments in other countries, a joint committee was appointed representing the Council on Medical Education and Hospitals of the American Medical Association, the Federation of State Medical Boards of the United States, the New York Board of Regents, the National Board of Medical Examiners, and the Association of American Medical Colleges.

The governments of France and Germany have already taken cognizance of the situation and sent representatives to this country to discuss appropriate measures for dealing with students from the United States. In some universities, entrance requirements have been raised; in some, student enrolment has been limited. In all cases, credentials will be carefully scrutinized. Altogether, a better understanding has been achieved. A total of 237 medical faculties were solicited inquiring as to the number of students, citizens of the

TABLE 14.—Citizens of the United States Enrolled in Medical Faculties Abroad

	Students, 1932-1933			Students, 1932-1933		
	Totals	Enrolled	Completed Course	Totals	Enrolled	Completed Course
Austria	21	0				
Karl-Franzens-Universität, Graz.....		10	0	Germany—Continued		
Leopold-Franzens-Universität, Innsbruck.....	10	11	0	Universität Halle	20	0
Belgium		6	0	Hamburgische Universität	15	0
Canada	324	73		Albertus-Universität, Königsberg	16	0
University of Alberta, Edmonton.....		1	0	Universität Köln	27	0
Dalhousie University, Halifax, N.S.		27	3	Universität Leipzig	28	1
Queen's University, Kingston, Ont.		18	1	Philipps-Universität, Marburg	2	0
University of Western Ontario, London.....		17	3	Ludwig-Maximilians-Universität, München	61	2
McGill University, Montreal, Que.		217	40	Universität Rostock	4	0
University of Montreal, Que.		22	22	Eberhard-Karls-Universität, Tübingen	8	0
Laval University, Quebec.....		14	3	Greece	4	1
University of Saskatchewan, Saskatoon ..		1	..	National University of Athens.....	4	1
University of Toronto, Ont.		5	0	Hungary	13	1
University of Manitoba, Winnipeg		2	1	Magyar Királyi Pázmány Petrus Tudományegyetem, Budapest	8	1
China	19	0		Magyar Királyi Ferencz József Tudományegyetem, Szeged	5	0
Peking		1	0	Ireland	19	0
Pennsylvania		11	0	National University of Ireland University College, Dublin	1	0
Czechoslovakia	12	0		University of Dublin School of Physic.....	18	0
Univerzita Komenského, Bratislava.....		1	0	Italy	222	214
Masarykovy University, Brno.....		1	0	Regia Università di Bologna.....	50	1
Deutsche Universität, Prag.....		5	0	Regia Università di Firenze.....	4	0
Karlov University, Prague.....		12	0	Regia Università di Genova.....	5	0
England	57	1		Regia Università di Milano.....	2	0
University of Birmingham.....		3	0	Regia Università di Napoli.....	20	6
University of Bristol.....		4	0	Regia Università di Roma.....	132	207
University of Cambridge.....		6	0	Lithuania	4	0
University of Liverpool.....		1	0	Vytauto Didžiojo Universitetas, Kaunas.....	4	0
University of London		12	0	Poland	3	0
Charling Cross Hospital Medical School.....		1	0	Uniwersytetu Lwów	2	0
Guy's Hospital Medical School.....		1	0	Uniwersytetu Poznańskiego	1	0
King's College Hospital Medical School.....		12	0	Scotland	376	9
London (Royal Free Hospital) School of Medicine for Women.....		3	0	University of Aberdeen.....	12	1
Middlesex Hospital Medical School.....		1	1	School of Medicine of the Royal Colleges, Edinburgh	143	0
St. Bartholomew's Hospital Medical College.....		1	0	University of Edinburgh.....	46	2
St. George's Hospital Medical School.....		4	0	Anderson College of Medicine, Glasgow	55	0
St. Mary's Hospital Medical School.....		1	0	University of Glasgow.....	41	0
University College Hospital Medical School.....		1	0	University of St. Andrews.....	70	6
University College, London.....		1	0	Switzerland	403	5
University of Sheffield.....		6	0	Universität Basel	77	0
France	75	2		Universität Bern	132	0
Université de Lyon.....		4	0	Université de Genève.....	50	3
Université de Montpellier.....		12	0	Université de Lausanne.....	72	0
Université de Paris.....		56	2	Universität Zurich	72	0
Université de Strasbourg.....		2	0	Syria	7	0
Université de Toulouse.....		1	0	American University of Beirut.....	7	0
Germany	337	38		Yugoslavia	5	1
Rheinische Universität Bonn.....		82	35	Beogradskog Univeristeta	1	1
Universität zu Köln.....		20	0	Zagrebnaskog Univeristeta	4	0
Universität Frankfurt-am-Main.....		14	0			
		20	0	Totals for 1932-1933.....	1,911	346
		2	0	*Totals for 1931-1932.....	1,483	118
				*Totals for 1930-1931.....	977	85

* Figures revised.

United States, who were enrolled during the last semester of the scholastic year 1932-1933 and the number who completed the medical course at the end of each semester of the scholastic year 1932-1933. Of these 127 replied, 82 indicating United States citizens were enrolled and 45 reporting none enrolled. Medical schools in fifty-seven countries abroad, Canada and the Philippine Islands were solicited and the countries in which citizens of this country are studying total seventeen and Canada. A total of 157 European schools were written to, of which 95 replied, 69 indicating they had students and 26 reporting none. In the eighty-two medical faculties in which United States citizens are studying, a total of 1,911 were enrolled, of whom 346 completed the course, an increase of 428 and 228, respectively, over those enrolled in the previous session. These data

are enumerated in table 14. The number of physicians educated abroad who were licensed in the United States in the last five years are given in table 13.

The problem of the overcrowding of the medical profession in this country is acute. Our own schools are turning out graduates in excess of the demand. To permit the large number of applicants who cannot be accommodated in the medical schools of the United States to study abroad and then return here to practice would inevitably lower the standards and corrupt the ideals of medicine. Now that steps have been taken to check the tide of migrating students to Europe, it is to be expected that it will turn in other directions. As a basis for intelligent action and cooperation, a worldwide survey of medical education and licensure is urgently needed.

PART III. EDUCATION OF INTERNS AND RESIDENTS IN APPROVED HOSPITALS

For the calendar year 1932, 683 general hospitals reported the present status of their educational programs. This represents a slight increase over the 676 replies that were tabulated in the Educational number of 1932.

All but one approved hospital cooperated. One army hospital and one navy hospital report that no interns are to be trained and, as a result, these have been omitted from the tabulation.

MEDICAL GRADUATION AND INTERNSHIP

Table 15 indicates the present relationship between the number of graduates of medical colleges in the United States and Canada and the number serving internships. The data refer to the academic year 1931-1932 and extend to July 1, 1932. There is, of course, a discrepancy between these figures and those supplied in other tables which generally represent conditions as of July 1, 1933.

The column containing the "number interning" includes 1,224 graduates serving internships as a requirement for the M.D. degree. Subtracting this figure from the total number interning leaves 4,067, or 95 per cent of 4,270, the total number of graduates.

TABLE 15.—*Graduates of 1932 and Fifth Year Students who Have or Are Serving Internships*

School	Number Graduates	Number Interning
University of Arkansas School of Medicine.....	46	41
University of California Medical School.....	*	54
College of Medical Evangelists.....	*	70
University of Southern California School of Medicine	*	7
Stanford University School of Medicine.....	*	49
University of Colorado School of Medicine.....	53	53
Yale University School of Medicine.....	44	44
Georgetown University School of Medicine.....	134	134
George Washington University School of Medicine.....	57	57
Howard University College of Medicine.....	55	49
Emory University School of Medicine.....	53	50
University of Georgia School of Medicine.....	38	38
Loyola University School of Medicine.....	*	114
Northwestern University Medical School.....	*	146
University of Chicago, Rush Medical College.....	*	125
University of Chicago, The School of Medicine of the Division of the Biological Sciences.....	*	18
University of Illinois College of Medicine.....	*	147
Indiana University School of Medicine.....	94	89
State University of Iowa College of Medicine.....	98	96
University of Kansas School of Medicine.....	53	53
University of Louisville School of Medicine.....	88	76
Tulane University of Louisiana School of Medicine.....	108	102
Johns Hopkins University School of Medicine.....	67	64
University of Maryland School of Medicine and College of Physicians and Surgeons.....	102	99
Boston University School of Medicine.....	52	52
Harvard University Medical School.....	136	136
Tufts College Medical School.....	115	107
University of Michigan Medical School.....	120	123
Detroit College of Medicine and Surgery.....	*	65
University of Minnesota Medical School.....	*	166
St. Louis University School of Medicine.....	105	100
Washington University School of Medicine.....	88	87
Creighton University School of Medicine.....	51	49
University of Nebraska College of Medicine.....	78	78
Albany Medical College.....	27	27
Long Island College of Medicine.....	110	98
University of Buffalo School of Medicine.....	50	50
Columbia University College of Physicians and Surgs.	101	87
Cornell University Medical College.....	60	60
New York Homeopathic Medical College and Flower Hospital.....	80	69
New York University, University and Bellevue Hospital Medical.....	116	105
University of R.....	35	35
Syracuse Univer.....	47	47
.....	18*	18
.....	*	67
.....	57	55
.....	75	67
.....	47	47
.....	55	54
University of Oregon Medical School.....	111	111
Hahnemann Medical College and Hospital of Philadelphia.....	143	143
Jefferson.....	107	107
Temple.....	132	131
University of Pennsylvania School of Medicine.....	22	21
Woman's Medical College.....	66	66
University of Pittsburgh.....	33	31
Medical College of the Sta.....	112	95
University of Tennessee College of Medicine.....	50	41
.....	53	53
.....	67	64
.....	71	67
.....	36	35
.....	49	49
.....	91	84
.....	53	52
.....	*	60
.....	22	22
.....	*	40
.....	*	20
Dalhousie University Faculty of Medicine.....	46	42
Queen's University Faculty of Medicine.....	34	32
University of Western Ontario Medical School.....	143	129
University of Toronto Faculty of Medicine.....	98	98
McGill University Faculty of Medicine.....	*	49
University of Montreal Faculty of Medicine.....		
Totals.....	4,270	5,291

* An internship or other acceptable clinical work is a requirement for graduation.

** Two year internship requirement after graduation.

REQUIRED INTERNSHIPS

Tables 16 and 17 show the state licensing boards and medical colleges now requiring internships for licensure and the M.D. degree, respectively. Vermont is added to the list of states and Louisiana State University Medical Center to the medical colleges. The

University of Oklahoma has rescinded its action requiring the internship.

The hospital internship has been adopted as an essential qualification for the license to practice in seventeen states, the District of Columbia and Alaska. These states and the effective date of the requirement are as follows:

TABLE 16.—*Internship Required by State Licensing Boards*

Pennsylvania.....1914	South Dakota.....1925
New Jersey.....1916	Utah.....1926
Alaska.....1917	Wisconsin.....
Rhode Island.....1917	
North Dakota.....1918	
	Oklahoma.....1933
	Oregon.....1933
Delaware.....1924	Vermont.....1934
Iowa.....1924	

Fifteen medical colleges in the United States and three in Canada have adopted a year of internship or other acceptable clinical work as a prerequisite for graduation. Duke University School of Medicine requires two years of internship or laboratory work after graduation. These colleges and the effective date of the requirement are as follows:

TABLE 17.—*Hospital Internship Required by Medical Colleges*

	Effective Date
UNITED STATES	
University of Minnesota Medical School.....	1915
Stanford University School of Medicine.....	1919
University of Chicago, Rush Medical College.....	1919
University of California Medical School.....	1919
Marquette University School of Medicine.....	1920
Northwestern University Medical School.....	1920
University of Illinois College of Medicine.....	1922
Loyola University School of Medicine.....	1922
Detroit College of Medicine and Surgery.....	1924
University of Cincinnati College of Medicine.....	1926
College of Medical Evangelists.....	1927
University of Chicago, The School of Medicine of the Division of the Biological Sciences.....	1930
Duke University School of Medicine.....	1932
University of Southern California School of Medicine.....	1933
Louisiana State University Medical Center.....	1934
CANADA	
University of Manitoba Faculty of Medicine	
Dalhousie University Faculty of Medicine	
University of Montreal Faculty of Medicine	

GROWTH OF INTERNSHIPS

Table 18 indicates that more hospitals each year are qualifying for internship approval and the steady increase in the number of positions continues. This increase, however, has been insufficient during the present period of financial depression to take care of all applicants. The practice of remaining for second and even third years of internship in approved hospitals has become so widespread as to prevent, in some instances, recent graduates from finding openings in

TABLE 18.—*Growth of Internships*

	1914	1920	1925	1930	1931	1932
Number of approved hospitals.....	603	593	528	654	674	689
Medical graduates.....	3,594	3,047	3,974	4,565	4,735	4,936
Number of internships.....	3,093	3,420	3,832	5,531	6,154	6,204

approved hospitals. The assumption is that, as soon as practice again attracts the many residents and interns continuing their hospital experience, this problem will readily solve itself. In any event, those interns who had not been placed by July 1 must have been unfortunate or very improvident.

Data compiled just before publication show that the 689 approved hospitals are employing 6,204 interns.

Compared to the figure in table 15 representing recent graduates now serving in hospitals, somewhat less than a thousand interns are remaining in hospitals for additional periods of internship. This figure just about represents the proportion by which positions exceed applicants in normal times.

DENTAL INTERNSHIPS

By request of a number of dentists, the blank for annual reports on internships this year contained several questions relating to dental interns. The replies are tabulated in table 19. Information has been received only from approved internship hospitals in the belief

University Hospitals at Iowa City, the Louisville City Hospital at Louisville, Ky., the Maryland General Hospital at Baltimore, the University Hospital at Minneapolis and the Presbyterian Hospital at Pittsburgh have affiliations with faculties of local dental schools.

THE INTERN COMMITTEE

Year by year the conviction grows that the intern committee is by far the most important single factor in the training of interns in approved hospitals. If it is true that the greater the cooperation of the staff, the better the internship, it is likewise true that staff cooperation is a direct product of the earnestness and

TABLE 19.—Approved Intern Hospitals Which Employ Dental Interns

Hospital	Length of Salary			Hospital	Length of Salary		
	Num-ber	Service (Months)	per Month		Num-ber	Service (Months)	per Month
General Hospital of Fresno County, Fresno, Calif.	1	12	\$25	Beth Israel Hospital, New York	1	12	.....
Los Angeles County General Hospital, Los Angeles	1	12	None	Fifth Avenue Hospital, New York	1	12	None
Highland Hospital, Oakland, Calif.	1	12	\$25	Fordham Hospital, New York	2	12	None
Letterman	2	24	(a)	Gouverneur Hospital, New York	2	12	None
San Francisco	1	12	\$50	Harlem Hospital, New York	2	12	None
U. S. Marine	2	12	\$100	Hospital for Joint Diseases, New York	1	12	None
Hartford	1	12	None	Lenox Hill Hospital, New York	1	12	\$25(d)
St. Mary's	1	12	\$25	Lincoln Hospital, New York	3	12	None
Freedmen's	1	12	\$10	Metropolitan Hospital, New York	1	12	None
Georgetown	1	12	\$10	Montefiore Hospital, New York	2	12	\$25
Providence	1	12	\$10	Mt. Sinai Hospital, New York	2	12	None
Cook Cou.	2	12	None	New York City Hospital	1	12	None
St. Luke's Hospital, Chicago	1	12	None	New York Polyclinic Medical School and Hospital, New York	3	12	None
U. S. Marine Hospital	1	12	\$100	New York Post-Graduate Medical School and Hospital, New York	2	12	None
University of Chicago	1	12	None	Presbyterian and Sloane Hospitals, New York	2	12	None
James Whitcomb				St. Vincent's Hospital, New York	1	12	None
William H. Cole				Sydenham Hospital, New York	2	12	\$50(e)
Robert W. Long	1	12	\$12.50	United Hospital, Port Chester, N. Y.	1	12	None
University Hospitals, Iowa City	2	12	None	Strong Memorial Hospital, Rochester, N. Y.	1	12	None
Louisville City Hospital, Louisville, Ky.	1	12	\$125	U. S. Marine Hospital, Staten Island, N. Y.	2	12	\$100
Charity Hospital, New Orleans	1	12	Bonus	Grasslands Hospital, Valhalla, N. Y.	3	12	\$50
U. S. Marine Hospital, New Orleans	5	12	(a)	Cincinnati General Hospital, Cincinnati	6	12	None
Baltimore City Hospitals, Baltimore	2	12	\$25	City Hospital, Cleveland	1	12	\$42
Johns Hopkins Hospital	1	12	None	Mt. Sinai Hospital, Cleveland	1	12	\$10
Maryland General Hospital	1	12	\$10	St. Luke's Hospital, Cleveland	1	12	None
U. S. Marine Hospital	2	12	(a)	Miami Valley Hospital, Dayton, Ohio	1	12	\$25
	1	12	None	St. Elizabeth Hospital, Dayton, Ohio	1	12	\$25
Worcester, Mass.	1	12	None	Youngstown Hospital, Youngstown, Ohio	1	12	\$50
University Hospital, Ann Arbor, Mich.	2(e)	24	.....	Multnomah Hospital, Portland, Ore.	1	12	.....
Grace Hospital, Detroit	2	12	None	Bryn Mawr Hospital, Bryn Mawr, Pa.	1	12	\$50
Harper Hospital, Detroit	2	12	\$25	Chester Hospital, Chester, Pa.	1	12	\$20
Hurley Hospital, Flint, Mich.	1	Open	\$100	Easton Hospital, Easton, Pa.	1	12	None
Minneapolis General Hospital, Minneapolis	3	12	None	Fredk. Douglass Mem. Hospital (col.), Philadelphia	1	12	.....
University Hospitals, Minneapolis	1	12	None	Hahnemann Hospital, Philadelphia	1	12	.....
Ancker Hospital, St. Paul	1	12	None	Hospital of the Protestant Episcopal Church in Philadelphia	1	12	None
Creighton Memorial St. Joseph's Hospital, Omaha	1	12	\$5	Hospital of the University of Pennsylvania, Philadelphia	1	12	None
Englewood Hospital, Englewood, N. J.	2	12	\$22	Jefferson Medical College Hospital, Philadelphia	1	12	None
Mountainside Hospital, Montclair, N. J.	1	12	\$25	Jewish Hospital	2	12	None
Newark Beth Israel Hospital, Newark, N. J.	2	12	\$25.50	Misericordia Hospital	1	12	None
Newark City Hospital, Newark, N. J.	1	12	None	Pennsylvania General	2	12	None
Mercer Hospital, Trenton, N. J.	1	12	\$30	Philadelphia General	1	12	None
Binghamton City Hospital, Binghamton, N. Y.	1	12	\$50	Pittsburgh	3	12	None
Beth Moses Hospital, Brooklyn (b)	1	12	.....	St. Joseph's Hospital	1	12	None
Coney Island Hospital, Brooklyn (b)	1	12	None	Knoxville General	1	12	\$25
Cumberland Hospital, Brooklyn	2	12	None	St. Joseph's Hospital, Memphis, Tenn.	1	12	None
Greenpoint Hospital, Brooklyn	2	12	None	Parkland Hospital, Dallas, Texas	1	12	\$25
Israel Zion Hospital, Brooklyn	1	6	None	Jefferson Davis Hospital, Houston, Texas	3	12	\$45
Jewish Hospital	1	12	None	Harborview Hospital, Seattle	1	12	\$30
Kings County	4	12	None				
St. Mary's Hos.	2	12	None				
Buffalo City	7	12	\$100				
Flushing Hos.	1	..	\$150				
St. John's Lo							
N. Y.	1	24	.....			
Bellevue Hospital, New York	6	12	None				

(a) Salary established by Government Pay Tables according to rank and service.

(b) Extra.
(c) One senior and one junior.

(d) Bonus at end of year.
(e) Salary does not include maintenance.

that positions offered by such institutions to recent dental graduates would partake of the advanced status of the approved medical internships. There are, no doubt, additional internships available in other hospitals. However, these 104 hospitals offering 166 dental internships would represent the pick of present supervised experience.

Information was also received as to how this experience was supervised. The replies were so nearly uniform as hardly to need tabulation. In all but a few instances, teaching and supervision were stated to be in the hands of the attending dental staff. A few mentioned resident dentists as furnishing this service. The

diligence of the intern committee or in direct proportion to it. Of all approved hospitals, only eighteen definitely state that no intern committee exists.

The majority of these committees have no regular meetings, although many were stated to meet each month. As is well known, the usual duties of the intern committee consist largely in studying applications, making appointments, and establishing contacts with the medical schools or fraternities. Not infrequently they are called on to arrange schedules and discipline unruly interns; but, if residents are employed, they even avoid such responsibilities. There often is a lecture by the chairman to the incoming interns on

the first day of service. From then on more or less haphazard, desultory contact is maintained with the house staff.

Despite the imperfections of this present arrangement, the intern committee represents a distinct advance over supervision by the staff, either as a whole or individually. This centralization of responsibility has provided a widespread stimulus toward acquiring definite principles and an adequate conception of what the internship has come to mean. The reports of the Council's hospital inspectors almost invariably indicate that a hospital with an active intern committee is a hospital in which the interns are, much more often than not, satisfied, loyal and industrious.

The conviction also has been growing that interns cannot be expected to derive full benefit from their hospital experience unless some attempt is made to limit the actual number of attending men with whom they are to be associated. It is educationally unsound to expect an intern to leave his medical school and absorb the conflicting views and empiricism of a hundred or more staff members. There is a well developed opinion that, should those staff members who by training or inclination qualify as teachers be formulated in a rather definite teaching group, the internship would be much better for it.

However, there has also been a movement away from overstandardization in medical education and this has come to include the internship, in the belief that no benefit is gained by attempting to produce physicians all in the same mold.

STAFF ACTIVITIES FOR THE INTERNS

The accompanying tables illustrate the principal opportunities now made available and supervised by hospital staffs. It expresses in tabular form the train-

TABLE 20.—Duties Required of Interns

	Yes	No
Attendance at staff meetings.....	647	36
Laboratory service	506	177
X-ray service	427	256
Attendance at necropsies.....	636	47
Outpatient service	463	220

TABLE 21.—Staff Activities for Interns

	Yes	No
Intern committees	646	37
Clinical pathologic conferences.....	572	111
Staff lectures	411	272
Ward rounds	643	40
Checking histories	652	31

TABLE 22.—Opportunities for Interns

	Yes	No
Otolaryngology.....	647	36
Anesthesia.....	625	58
Fractures.....	673	10
Venereal disease.....	583	100
Tuberculosis.....	471	212
Psychiatry.....	394	289
Dietetics.....	430	253
Pharmacy.....	247	436
Prenatal.....	458	225
Contagious.....	351	332
First aid.....	653	30
Neurology.....	584	99

ing which the present body of interns is obtaining in a number of the less usual services. It will be noted that pharmacy is most neglected and that opportunities for the study of contagious diseases, prenatal cases,

psychiatry and tuberculosis are relatively infrequent. Greater emphasis on these particular specialties in hospitals could conceivably have some effect on the recognition and proper disposal of these particular types of patients. It is these groups which practitioners are generally inclined to neglect or dislike more than others.

PERFORMANCE OF NECROPSIES

Reference to table 23 shows the gradually increasing ability of the American hospital to obtain consent for

TABLE 23.—Necropsy Performance in Approved Hospitals

Percentage	1926	1928	1930	1932
Over 70	14	16	19	20
50 to 70	21	45	56	71
30 to 50	68	132	164	214
15 to 30	146	219	354	316
Under 15	329	189	71	62

necropsy study. The sixty-two approved internship hospitals which failed to make the grade of 15 per cent in 1932 will gradually be eliminated.

RESIDENCIES

The attention of staff residency committees is directed to the revised Essentials in a Hospital Approved for Residencies in Specialties, first printed in the Hospital Number, March 25, 1933, and passed in substantially the same form by the House of Delegates of the American Medical Association at the Milwaukee session. Copies of these regulations are now available on request. In the present issue, a revised list of approved residency hospitals is published in different format. Each hospital is now listed under the specialty headings offered at that institution. The indicated bed capacity is the entire capacity of the hospital and does not represent the actual number of beds devoted to the particular specialty. Information about salaries has been deleted because of the unreliability of present figures and the present instability of salary schedules. This list will be revised regularly for publication in appropriate issues of THE JOURNAL and for distribution in reprint form.

PROGRESSION IN HOSPITAL EXPERIENCE

The increased interest recently displayed in certification of specialists has also focused attention on the mission which the hospital is to play in the training of these men. The Council has recognized the importance of a period of hospital training by revising considerably its regulations for residencies.

These regulations have the intention of ensuring a resident satisfactory clinical material, qualified teaching personnel, active management of patients and opportunities for investigation and research. The term "residency" is clearly defined as to prerequisites, duties and duration of service. Further, these new essentials clearly state that a "residency" in itself by no means qualifies a physician as a specialist.

The Council has always considered that graded study and experience are derivatives of the soundest pedagogic principles, and, in fact, bestows its approval of undergraduate and postgraduate teaching on that basis. The residency in a specialty also lends itself to this classification.

There are a number of teaching hospitals which have developed residency training so elaborately that the occupants of these positions come to be exceedingly well trained specialists. These institutions provide a

graded series of responsibilities corresponding to the growing ability and enlarging experience of the resident. These successive stages have been: (a) an internship of one or more years in an acceptable hospital, (b) a year as junior resident, (c) one or more years as assistant resident, (d) finally, as the culmination of his training, the position of chief resident.

There is no doubt that residencies need supervision, yet it would be unfortunate if these positions should have to be standardized too much. Obviously, a physician of the rank of resident is no professional parvenu—he may rightfully begin to consider himself as having advanced beyond the stage of spoonfeeding on the one hand or restrictions and safeguards such as are imposed against interns on the other. Without the privilege of assuming some responsibility, a residency is hardly worth the time.

Many believe that physicians intending to become specialists should spend several years in general practice in order to become familiar with all the symptoms of disease and, above all, to understand the pathologic and physiologic interrelationships between their special field and other systems of the body.

METHODS OF ACCORDING CREDIT FOR HOSPITAL SERVICE

The same interest in certification of specialists has led to the need for some central registry for recording

each physician's entire educational experience. Such a registry already exists in the biographic department of the American Medical Association, the facilities of which are now being enlarged for the recording of all data relative to hospital service. At present the following classification is used:

1. An internship in an unapproved hospital is recorded as "hospital experience."

2. A residency in an unapproved hospital:

(a) If an internship has previously been served in an approved hospital, is rated "additional internship."

(b) If the internship was served in an unapproved hospital, it is recorded as "additional hospital experience."

3. Any internship or residency served in an approved hospital receives credit without question, unless the intern or residency committee declines to recommend the individual for this recognition.

4. Periods of residency longer than three years in duration are not eligible to approval unless definitely graded.

5. Additional years of rotating internship service in the same or different approved hospital, may be designated:

(a) A senior internship, if no grades above this service are offered.

(b) A junior residency, if it leads to a more advanced position.

DESCRIPTION OF MEDICAL COLLEGES

ALABAMA

University

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, University, Ala.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are seventy semester hours of collegiate work. The course of study covers two years of thirty-six weeks each. The faculty includes 13 professors and 10 instructors, assistants, etc., a total of 23. The tuition fees are \$251.50 for the first year and \$271.50 the second year. Total registration for 1932-1933 was 107. The sixty-eighth session begins Sept. 6, 1933, and ends May 22, 1934. The Dean is Stuart Graves, M.D.

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 300 West Markham Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 33 professors and 63 lecturers and assistants, total 96. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees for the four years, respectively, for residents of Arkansas are \$192.50, \$187.50, \$182.50 and \$182.50; nonresidents are charged \$150 additional each year. The total registration for 1932-1933 was 197; graduates, 45. The fifty-fifth session begins Sept. 20, 1933, and ends June 5, 1934. The Dean is Frank Vinsonhaler, M.D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Third and Parnassus avenues, San Francisco.—Organized in 1862 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica, and therapeutics were provided. Coeducational since organization. Three years of collegiate work is required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 133 professors and 246 associates and assistants, a total of 379.

The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are \$290, \$225, \$225 and \$225; nonresidents are charged \$300 additional each year. Total registration for 1932-1933 was 231; graduates, 54. The sixty-first session begins Aug. 21, 1933, and ends May 19, 1934. The Dean is Langley Porter, M.D., San Francisco.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda, the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of 57 professors and 197 associates, assistants and instructors, a total of 254. The course covers a period of five years, including one year of internship. During the first and second years, the students are in school twelve months each year. This is accomplished by means of the "cooperative plan," the student spending alternate months in an approved hospital in practical lines of medical training. Sixty-four semester hours of collegiate work is required for admission. The total fees for the four years, respectively, are \$385, \$375, \$480 and \$440. The total registration for 1932-1933 was 389, graduates, 68. The twenty-fifth session begins July 2, 1933, and ends June 17, 1934. The Dean of the Loma Linda Division is E. H. Risley, M.D., and the Dean of the Los Angeles Division is Arthur E. Coyne, M.D.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Medical Department of the University of California in Los Angeles. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May, 1928, under present title. The faculty consists of 121 professors and 64 instructors, assistants and others, a total of 185. A fifth intern year is required. Three years of collegiate work is required for admission. Coeducational since organization. Annual fees amount to \$450. The total registration for 1932-1933 was 157; graduates, 7. The next session begins Sept. 20, 1933, and ends June 14, 1934. The Dean is Paul S. McKibben, Ph.D.

San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, 2398 Sacramento Street, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. Coeducational since organization. The faculty consists of 99 professors and 133 lecturers, assistants and others, a total of 232. Three years of collegiate work is required for admission. The course covers four years of eight and one-half months each, plus a fifth year of intern work. The fees for the four years, respectively, are \$387, \$369, \$360 and \$360. The total registration for 1932-1933 was 191; graduates, 47. The twenty-fourth session begins Oct. 4, 1933, and ends June 13, 1934. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1896 and 1899. Denver and Gross College of Medicine was merged, Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The course covers four years of nine months each. The college also is urging a year's internship in a hospital. The entrance requirements beginning in 1934 are three years of collegiate work. The fees for residents of Colorado, for each of the four years are, respectively, \$211, \$231, \$181 and \$191. Nonresidents are charged \$132 additional each year. The total registration for 1932-1933 was 220; graduates, 46. The fifty-second session begins Sept. 25, 1933, and ends June 11, 1934. The Dean is Maurice H. Rees, M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 117 professors and 158 lecturers and assistants, a total of 275. The requirements for admission are three years of collegiate work plus completion of courses in physics, inorganic chemistry, qualitative analysis, general biology, organic chemistry and physical chemistry or laboratory physics, all equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are \$505, \$500, \$500 and \$520. The total registration for 1932-1933 was 197; graduates, 38. The one hundred and twenty-first session begins Sept. 25, 1933, and ends June 13, 1934. The Dean is Milton C. Winternitz, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized 1851. First class graduated in 1852. The faculty is composed of 101 professors, 110 instructors and assistants; total, 211. Three years of collegiate work is required for entrance. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions, respectively, are \$465, \$460, \$410 and \$410. The total registration for 1932-1933 was 591; graduates, 132. The eighty-third session begins Sept. 21, 1933, and ends June 11, 1934. The Dean is William Gerry Morgan, M.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 53 professors and 112 instructors, demonstrators and assistants, a total of 165. Two years of collegiate work is required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are \$500 each year. The total registration for 1932-1933 was 292; graduates, 63. The one hundred and ninth session begins Sept. 20, 1933, and ends June 2, 1934. The Dean is Earl B. McKinley, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 30 professors and 63 lecturers and assistants, 93 in all. The admission requirements are at least two years of collegiate work, including physics, chemistry, botany and zoology, English and French or German. The course covers four years of thirty-three weeks each. The fees for each of the four sessions, respectively, are \$269.50, \$269.50, \$259.50 and \$266.50. Registration for 1932-1933 was 204; graduates, 42. The sixty-sixth session begins Oct. 2, 1933, and ends June 8, 1934. The Dean is Numa P. G. Adams, M.D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street and Druid Hills.—Organized in 1854 as the Atlanta School of Medicine. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work is required for admission. The faculty consists of 19 professors and 168 associates and assistants, a total of 187. The course of study is four years of thirty-two weeks each. The fees for each of the four years are \$300. Total registration for 1932-1933 was 219; graduates, 52. The next session begins Sept. 27, 1933, and ends June 11, 1934. The Dean is Russell H. Oppenheimer, M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia, the name being changed July 1, 1933, to University of Georgia School of Medicine. Property transferred to university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 41 professors and 26 assistants, 67 in all. Two years of collegiate work is required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are \$185 for residents of Georgia, and \$365 each year for nonresidents. The total registration for 1932-1933 was 158; graduates, 38. The one hundred and fifth session begins Sept. 25, 1933, and ends June 4, 1934. The Dean is William Lorenzo Moss, M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Lincoln Street.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Coeducational. Two years of collegiate work is required for admission. The course of study is five years, including an internship in a hospital. The faculty is composed of 52 professors and 241 assistants, lecturers, instructors and others, a total of 293. The fees for each year are \$336, \$409, \$332, and \$298, respectively. The total enrollment for 1932-1933 was 450; graduates, 114. The next session begins Oct. 2, 1933, and ends June 16, 1934. The Dean is Louis D. Moorhead, M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 127 professors and 283 lecturers and assistants, a total of 410. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus three years of collegiate work, including courses in physics, chemistry, biology and a foreign language. The course covers four years of eight months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are \$365 each year. The total registration for 1932-1933 was 550; graduates, 124. The seventy-fifth session begins Oct. 3, 1933, and ends June 14, 1934. The Dean is Irving S. Cutter, M.D.

UNIVERSITY OF CHICAGO, RUSH MEDICAL COLLEGE, 1758 West Harrison Street.—Chartered in 1837; held first class in 1843. First class graduated in 1844. In 1887 the college became the medical department of Lake Forest University, retaining, however, its self-government. This relation was dissolved in April, 1898, and in the same month affiliation with the University of Chicago was established. Coeducational since 1898. Since that time the work of the first two years has been given on the University Quadrangles. In May, 1924, by a new contract, the University of Chicago took over the work of Rush Medical College as a department of the university. Thereafter only clinical work has been offered by Rush Medical College. Since 1914 the course has included a fifth year consisting of a hospital internship or of a fellowship in one of the departments. Three years of collegiate work is required for admission. The year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The faculty is composed of 121 professors, 149 associates, instructors and others, a total of 270. The fee for the third year is \$380, and for the fourth, \$400. Total registration for 1932-1933 was 332; graduates, 125. The eighty-ninth session begins Oct. 2, 1933, and ends June 12, 1934. The school is in session all year except the month of September. The Dean is Ernest E. Irons, M.D.

UNIVERSITY OF CHICAGO, THE SCHOOL OF MEDICINE OF THE DIVISION OF THE BIOLOGICAL SCIENCES, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924. The work of the first two years of the medical course has been given on the Quadrangles since 1899 as Rush Medical College, and that of the third and fourth clinical years was added in 1924 with the organization of this medical school and the construction on the Quadrangles of the university hospitals and clinics. Coeducational. A fifth year, spent in successful internship in an approved hospital or in advanced work in some branch of medical science, is required for the degree of M.D. The faculty is composed of 98 professors, 132 associates, instructors and others, a total of 230. The requirements for admission are three years of collegiate work. The year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. Students are admitted at the beginning of the autumn quarter. The tuition fees for each of the four years are \$375. Total registration for 1932-1933 was 264; graduates, 18. The next session begins Oct. 2, 1933, and ends June 13, 1934. The Dean of Medical Students is B. C. H. Harvey, M.D.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Polk Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June, 1912, and was restored in March, 1913, when the present title was assumed. Coeducational since 1898. Two years of collegiate work is required for admission. The curriculum

covers four years of thirty-two weeks each, and a year of internship in an approved hospital. The faculty is composed of 92 professors and 201 assistants and instructors, a total of 293. The tuition is \$200 a year for students who are residents of Illinois; \$300 a year for non-resident students. The total registration for 1932-1933 was 637; graduates, 118. The fifty-second session begins Oct. 2, 1933, and ends June 9, 1934. The Dean is David John Davis, M.D.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors, lecturers, associates and assistants. Two years of collegiate work is required for admission. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The fees for each of the four years, respectively, are \$187, \$186, \$182 and \$177 for residents of Indiana, and \$75 additional for first year, and \$175 additional for last three years, for nonresidents. The total registration for 1932-1933 was 459; graduates, 102. The next session begins Sept. 12, 1933, and ends June 11, 1934. The Dean at Bloomington is Burton D. Myers, M.D., and the Dean at Indianapolis is Willis Dew Gatch, M.D.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 46 professors, 63 lecturers, demonstrators and assistants, a total of 109. Two years of collegiate work, including courses in physics, chemistry, biology, German and English, is required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee is \$192 each year for residents of Iowa and \$456 for nonresidents. Total registration for 1932-1933 was 373; graduates, 93. The sixty-fourth session begins Sept. 25, 1933, and ends June 4, 1934. The Chairman of the Executive Committee is John Thomas McClintock, M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. First class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 52 professors and 124 instructors, assistants and others, a total of 176. The requirement for admission is two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, \$147, \$139, \$117.50 and \$120. For nonresidents the fees are \$212, \$204, \$205, \$207.50. The total registration for 1932-1933 was 288; graduates, 61. The fifty-fourth session begins Sept. 21, 1933, and ends June 11, 1934. The Dean is H. R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE. First and Chestnut streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work is required for admission. The faculty numbers 66 professors and 77 assistants, instructors and others, a total of 143. Course covers four years of thirty-two weeks each, exclusive of vacations and examinations. Fees for four years are, respectively, \$365, \$365, \$370 and \$380. Total registration for 1932-1933 was 348; graduates, 85. Next session begins Sept. 14, 1933, and ends June 2, 1934. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

LOUISIANA STATE UNIVERSITY MEDICAL CENTER, 1532 Tulane Avenue.—Organized January, 1931. Coeducational. First session October, 1931, with students of first and third years. Faculty comprises 32 professors and 117 assistant professors, instructors and assistants, a total of 149. Course covers four years of no less than 32 weeks each and one year of general rotation or laboratory internship in approved hospital. A minimum of two years' collegiate work is required for admission. Total fees, \$92 each year for residents of Louisiana; additional tuition of \$300

each year for nonresidents. Total registration for 1932-1933 was 171. The third session begins Sept. 20, 1933, and ends June 4, 1934. The Dean is Arthur Vidrine, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847, and became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 28 professors and 129 associate and assistant professors, instructors and assistants, a total of 157. The course covers four years of thirty-two weeks each. Two years of collegiate work is required for admission. Total fees for each of the four years, respectively, are \$350, \$340, \$325 and \$355. The total registration for 1932-1933 was 474; graduates, 103. The one hundredth session begins Sept. 22, 1933, and ends June 8, 1934. The Dean is Charles Cassidy Bass, M.D.

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Washington and Monument streets.—Organized in 1887. Offered preliminary course only until 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 72 professors and 294 instructors, assistants and others, a total of 366. The requirements for admission demand that the applicant possess a collegiate degree and have a knowledge of French and German (two years each of college instruction), physics and biology, such as may be obtained from a year's course, and a two years' course in chemistry. The course extends over four years of eight and one-half months each. The total fees for each year are, respectively, \$611, \$610, \$610 and \$610. Total registration for 1932-1933 was 289; graduates, 72. The forty-first session begins Oct. 3, 1933, and ends June 12, 1934. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 91 professors and 140 instructors and assistants, a total of 231. Two years of collegiate work is required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are \$385, \$375, \$375 and \$390 for residents of the state; for nonresidents the fees are \$150 additional each year. Total registration for 1932-1933 was 406; graduates, 84. The one hundred and twenty-sixth session begins Sept. 22, 1933, and ends June 6, 1934. The Dean is J. M. H. Rowland, M.D.

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work is required for admission. The faculty includes 20 professors, 156 associates and others, a total of 176. The course covers four years. Total fees for each of the four years, respectively, are \$421.50, \$421.50, \$396.50 and \$406.50. Total registration for 1932-1933 was 242; graduates, 53. The sixty-first session begins Sept. 21, 1933, and ends June 11, 1934. The Dean is Alexander S. Begg, M.D.

HARVARD UNIVERSITY MEDICAL SCHOOL, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 110 professors and 370 instructors and assistants, a total of 480. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, organic chemistry, and a reading knowledge of French or German. The total fee for each of the four years is \$400, plus \$5 the first year for matriculation. The total registration for 1932-1933 was 519; graduates, 129. The one hundred and fifty-first session begins Sept. 25, 1933, and ends June 21, 1934. The Dean is David L. Edsall, M.D.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 64 professors and 228 assistants, lecturers and others, a total of 292. A minimum of two years of collegiate work is required for admission, but applicants with degrees are given preference. The course covers four years of eight months each. The total fees for each of the four years are \$412, \$407, \$407 and \$417. Total registration for 1932-1933 was 462; graduates, 117. The thirty-eighth session begins Sept. 27, 1933, and ends June 18, 1934. The Dean is A. Warren Stearns, M.D.

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since organization. It has a faculty of 26 professors, 13 associate professors, 28 assistant professors, assistants, instructors and lecturers, 152; a total of 219. The entrance requirements are ninety semester hours, including courses in chemistry, physics and biology, with laboratory work,

and two years of French or German, and one year of the other, one year of which must be of college grade. The curriculum covers four years of nine months each. The total fees for Michigan students are \$200, \$205, \$205 and \$202.50 for each of the four years, respectively, plus a matriculation fee of \$10; for nonresidents, \$100 a year additional. The matriculation fee for nonresidents is \$25. The total registration for 1932-1933 was 485; graduates, 132. The eighty-fourth session begins Sept. 25, 1933, and ends June 8, 1934. The Secretary is Arthur C. Curtis, M.D.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with "combined degree" guaranteed by school of arts and sciences. The faculty consists of 33 professors, 101 lecturers and others, a total of 134. The course covers four years of nine months each and a fifth hospital intern year. The total fees for each of the first four years are, for Detroit residents, \$275; for nonresidents who reside in Michigan, \$375, and for nonresidents from outside the state, \$400. For the fifth or intern year the resident student fee is \$75, the nonresident fee is \$110. The total registration for 1932-1933 was 324; graduates, 65. The forty-ninth session begins Sept. 28, 1933, and ends June 22, 1934. The Dean is W. H. MacCracken, M.D.

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 87 professors and 216 instructors, a total of 303. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry, eight credits of zoology, and a reading knowledge of scientific German, with a "C" average in all subjects and in the sciences. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Students are graduated at the end of any quarter in which work is completed and examinations passed. Most students graduate in March or June. Total fees are \$243 for residents and \$318 for nonresidents, each year of three quarters. The total registration for 1932-1933 was 470; graduates, 125. The forty-fifth session begins Oct. 2, 1933, and ends June 15, 1934. The Dean is Elias P. Lyon, M.D.; Dean of Medical Sciences, Richard E. Scammon, Ph.D.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The faculty includes 13 professors and 14 assistant professors, lecturers and others, a total of 27. The entrance requirements are 90 semester hours of collegiate work, including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees for the first year are \$170; for the second, \$150. Nonresidents of the state pay \$25 per semester extra. Total registration for 1932-1933 was 86. The next session begins Sept. 11, 1933, and ends June 6, 1934. The Dean is Dudley S. Conley, M.D.

St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 80 professors and 224 instructors and assistants, a total of 304. The requirement for admission is a qualitative standard of two years of collegiate study in the customary subjects, but applicants presenting meritorious credit in excess of the two year minimum are accepted by preference. The curriculum covers four years of thirty-two weeks each. The summer is optional and offers courses academically equivalent to those in the regular session. The total fees for the four years, respectively, are \$395, \$390, \$390 and \$425. The total registration for 1932-1933 was 532; graduates, 115. The next session begins Sept. 20, 1933, and ends June 1, 1934. The Dean is Alphonse M. Schwitalla, S.J., Ph.D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis

Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. The faculty comprises 104 professors and 193 lecturers, instructors and others, a total of 297. Four years of collegiate work is required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are, respectively, \$424, \$419, \$419 and \$424. The total registration for 1932-1933 was 337; graduates, 93. The next session begins Sept. 28, 1933, and ends June 12, 1934. The Dean is W. McKim Marriott, M.D.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 66 professors and 72 instructors, lecturers and assistants, a total of 138. Two years of collegiate work is required for admission. The curriculum covers four years of eight months each. The total fees each year for the four years are, respectively, \$393.50, \$393.50, \$348.50 and \$346. Total registration for 1932-1933 was 315; graduates, 72. The fifty-second session begins Sept. 21, 1933, and ends June 7, 1934. The Acting Dean is John J. McNerny, S. J.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 69 professors and 53 lecturers and instructors, a total of 122. Sixty-five semester hours of collegiate work is required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are \$217, \$212, \$212 and \$212. Total registration for 1932-1933 was 338; graduates, 74. The next session begins Sept. 18, 1933, and ends June 4, 1934. The Dean is C. W. M. Poynter, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty consists of 15 professors and 10 instructors, a total of 25. Three years of collegiate work is required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are \$410 and \$400 for the second year. The total registration for 1932-1933 was 38. The next session begins Sept. 21, 1933, and ends June 19, 1934. The Dean is John P. Bowler, M.D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915, Union University assumed educational control. Coeducational since 1915. The faculty is composed of 26 professors and 100 instructors, assistants and others, a total of 126. Three years of collegiate work, including college courses in physics, chemistry (including inorganic, organic and analytic), biology, English, and a modern foreign language, is required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are \$445, \$420, \$405 and \$405. The total registration for 1932-1933 was 121; graduates, 30. The one hundred and third session begins Sept. 25, 1933, and ends June 11, 1934. The Dean is Thomas Ordway, M.D.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Organized in 1858 as the Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 117 professors and 160 assistants, instructors and others, a total of 277. Seventy-two semester hours of collegiate work, including college courses in physics, chemistry and biology, is required for admission. The course covers four years of eight months each. The total fees for each of the four years are, respectively, \$535, \$545, \$530 and \$560. Total registration for 1932-1933 was 424; graduates, 99. The third session begins Oct. 2, 1933, and ends June 5, 1934. The Dean is Adam M. Miller, A.M.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 73 professors and 156 associates, assistants and others, a total of 229. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German, is required for admission. The course covers four years of eight months each. The total fees for each of the four years are, respectively, \$527, \$522, \$517 and \$527. Total registration

for 1932-1933 was 282; graduates, 64. The eighty-eighth session begins Oct. 2, 1933, and ends June 13, 1934. The Dean is Edward W. Koch, M.D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The Medical School has been coeducational since 1917. The faculty is composed of 191 professors and 502 instructors, demonstrators and others, a total of 693. Three years of collegiate work including courses in physics, chemistry, biology and English constitutes the minimum requirement for admission. The work covers four years of eight months each. The total fees for the four years, respectively, are \$540, \$525, \$525 and \$545. Total registration for 1932-1933 was 413; graduates, 90. The one hundred and twenty-sixth session begins Sept. 27, 1933, and ends June 5, 1934. The Dean is Willard C. Rappleye, M.D.

CORNELL UNIVERSITY MEDICAL COLLEGE, York Avenue and Sixty-Ninth Street.—Organized in 1898. The work of the first year may be taken either in Ithaca or in New York. Coeducational since organization. The faculty is composed of 118 professors and 267 assistants, lecturers, instructors and others, a total of 385. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the bachelor degree on the completion of the first year's work. The candidate must also have a knowledge of physics, chemistry, biology, English and a modern language. The fees for each of the four years are, respectively, \$510, \$500, \$510 and \$525. Total registration for 1932-1933 was 253 (including Ithaca students); graduates, 55. The thirty-sixth session begins Sept. 25, 1933, and ends June 7, 1934. The Director is G. Canby Robinson, M.D.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, 450 East Sixty-Fourth Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; present title in 1908. The first class graduated in 1861. Coeducational since 1919. Two years of collegiate work is required for admission. The course covers four years of eight months each. It has a faculty of 53 professors and associate professors, 18 assistant professors and 98 lecturers and assistants, a total of 169. The total fees for the four years are, respectively, \$540, \$530, \$530 and \$560. Total registration for 1932-1933 was 308; graduates, 68. The seventy-fourth session begins Sept. 18, 1933, and ends June 5, 1934. The Dean is Claude A. Burrett, M.D.

NEW YORK UNIVERSITY, UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 477 First Avenue.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. Coeducational since 1919. The faculty is composed of 123 professors, associate, assistant, clinical and assistant clinical professors, and 251 lecturers, instructors and others, a total of 374. The course covers four years. Entrance requirements are that all candidates must be graduates of approved colleges or scientific schools, or seniors in good standing in approved colleges or scientific schools on condition that their faculty will permit them to substitute the first year in University and Bellevue Hospital Medical College for the fourth year of their college course and will confer on them the bachelor degree on the satisfactory completion of the year's work. The fees for the four years, respectively, are \$552, \$543, \$524 and \$565. Total registration for 1932-1933 was 511; graduates, 122. The next session begins Sept. 13, 1933, and ends June 13, 1934. The Dean is John Wyckoff, M.D.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE, Elmwood Avenue and Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 57 professors, 142 lecturers, assistants, instructors and others, a total of 199. The work embraces a graded course of four years of nine months each. Three years of collegiate work is required for admission. The total fees for each year are \$400. The total registration for 1932-1933 was 174; graduates, 37. The ninth session begins Sept. 18, 1933, and ends June 16, 1934. The Dean is George Hoyt Whipple, M.D.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 309-311 South McBride Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 37 professors and 154 associate and assistant professors, lecturers and instructors, a total of 191. Two years of a recognized college course is required for admission. The course covers four years of thirty-four weeks each. The fee for each of the first three years is \$500; for the fourth year, \$510. The total enrolment for

1932-1933 was 198; graduates, 40. The sixty-third session begins Sept. 28, 1933, and ends June 4, 1934. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Two years of collegiate work is required for admission. The faculty is composed of 9 professors and 3 instructors, a total of 12. The fees for each year are \$250 for residents; nonresidents, an additional fee of \$100. The total registration for 1932-1933 was 67. The forty-eighth session begins Sept. 22, 1933, and ends June 7, 1934. The Dean is I. H. Manning, M.D.

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1925. The first class was admitted, Oct. 1, 1930. Coeducational. The faculty is composed of 9 professors and 60 associate and assistant professors, lecturers, instructors and assistants, a total of 69. The entrance requirements are seventy hours of collegiate work, including two years each of chemistry and English, and one year each of biology, physics and mathematics. The academic year consists of four quarters of eleven weeks each. Students may either study four quarters each year, and if satisfactory will receive the M.D. certificate after three calendar years, or three quarters in each year, and if satisfactory be graduated after four calendar years. The object of utilizing the summer quarters is to provide more time for longer postgraduate intern training. Duke University will grant the degree of Bachelor of Science to students who have completed satisfactorily seventy semester hours in Duke University or some other approved university, six quarters in the Duke University School of Medicine, creditable extra work and have written an acceptable thesis. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are \$450 for each year of three quarters. Total registration for 1932-1933 was 165; graduates, 15. The fourth session begins Oct. 2, 1933, and ends Sept. 1, 1934. The Dean is Wilbur C. Davison, M.D.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—Organized in 1902. Coeducational. The faculty numbers 6 professors and 8 assistants, a total of 14. Sixty semester hours of collegiate work is required for admission. Only the first two years of the medical course is offered. After the completion of freshman and sophomore college work and two years of medicine, a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for the first year are \$220 and \$225 for the second year. The total registration for 1932-1933 was 59. The thirty-second session begins Sept. 12, 1933, and ends May 31, 1934. The Dean is Thurman D. Kitchin, M.D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Two years' work in a college of liberal arts is required for admission. The faculty consists of 5 professors and 8 instructors, a total of 13. The fees are \$75 each year for resident students and \$165 for nonresidents. The total registration for 1932-1933 was 58. The twenty-eighth session begins Sept. 19, 1933, and ends June 12, 1934. The Dean is H. E. French, M.D.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Commencing in 1934, candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours (completed in a college of satisfactory standing). The faculty consists of 117 professors and 158 associates, assistants, etc., a total of 275. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for the four years are, respectively, \$360, \$370, \$360 and \$380, and if not legal citizens of Cincinnati, \$50 additional. The total registration for 1932-1933 was 313; graduates, 67. The next session begins Sept. 23, 1933 and ends June 16, 1934. The Dean is Arthur C. Bachmeyer, M.D.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 64 professors and 174 lecturers,

assistants and others, a total of 238. The curriculum covers three years of eight and one-half months each and one year of nine months. Graduation from an approved college or scientific school or equivalent, following completion of a course of at least three collegiate years, is required for admission. The total fees for each of the four years are, respectively, \$442, \$435, \$415 and \$425. The total registration for 1932-1933 was 269; graduates, 61. The ninety-first session begins Sept. 14, 1933, and ends June 13, 1934. The Dean is Torald Sollmann, M.D.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 50 professors and assistant professors, 79 lecturers, instructors, demonstrators and others, a total of 129. Two years of collegiate work is required for admission. The course covers four years of thirty-four weeks each. Tuition fees are \$196, \$186, \$186 and \$196 each year, respectively, for residents of Ohio, and \$150 additional for nonresidents. The total registration for 1932-1933 was 365; graduates, 86. The next session begins Oct. 3, 1933, and ends June 13, 1934. The Dean is J. H. J. Upham, M.D.

OKLAHOMA

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. Coeducational since organization. Since September, 1928, the entire course has been given at Oklahoma City. It has a faculty of 28 professors, 44 associate and assistant professors and 64 instructors, a total of 136. Two years of collegiate work is required for admission. The course covers four years of nine months each. An optional course of six years is offered for the degree of B.S. and M.D. The total fees for the four years are, respectively, \$128, \$95.50, \$33 and \$25.50. For students residing outside the state of Oklahoma there is an additional fee of \$200 a year. The total registration for 1932-1933 was 255; graduates, 56. The thirty-third session begins Sept. 18, 1933, and ends June 4, 1934. The Dean is Lewis Jefferson Moorman, M.D.

OREGON

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 52 professors and 134 lecturers, assistants and others, a total of 186. Entrance requirements are three years of collegiate work or its equivalent. The course is four years of thirty-three weeks each. The total fees for the four years are, respectively, \$260, \$255, \$250 and \$250 for residents of Oregon, and \$60 a year additional for nonresidents. The total registration for 1932-1933 was 235; graduates, 51. The forty-seventh session begins Oct. 3, 1933 and ends June 11, 1934. The Dean is Richard B. Dillehunt, M.D.

PENNSYLVANIA

Philadelphia

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 235 North Fifteenth Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 76 professors and 125 lecturers, instructors and others, in all, 201. The work covers four years of eight and one-half months each. Fees for each of the four years are, respectively, \$455, \$427, \$427 and \$450. The total registration for 1932-1933 was 469; graduates, 108. The eighty-sixth session begins Oct. 2, 1933, and ends June 7, 1934. The Dean is William A. Pearson, M.D.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA, 1019 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 63 professors, associate and assistant professors and 174 associates, lecturers, demonstrators and instructors, a total of 237. Entrance requirements are a completed standard four-year high school college preparatory course, or the equivalent, and in addition four years of work leading to a degree in an approved college of arts and science, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and one-half months each. The total fees for the four years are, respectively, \$445, \$430, \$425 and \$425. The total registration for 1932-1933 was 572; graduates, 140. The one hundred and ninth session begins Sept. 20, 1933, and ends June 1, 1934. The Dean is Ross V. Patterson, M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Broad and Ontario streets.—Organized in 1901. The first class graduated in 1904. Coedu-

cational since organization. The faculty numbers 28 professors and 204 associates, assistants and others, a total of 232. Three years of collegiate work is required for admission. The fees for each of the four years, respectively, are \$485, \$455, \$435 and \$455. The total registration for 1932-1933 was 464, graduates, 112. The thirty-second session begins Sept. 27, 1933 and ends June 14, 1934. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth and Pine streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 83 professors, associate and assistant professors, and 299 lecturers, associates, instructors and others, a total of 382. Three years of collegiate work is required for admission, including courses in physics, biology or zoology, chemistry, including general inorganic, organic and analytic, English and French or German. The course covers four years of thirty-three weeks each. The tuition fee is \$500 each year, with a deposit fee of \$15, a student health fee of \$10 and a matriculation fee of \$5. Total registration for 1932-1933 was 522; graduates, 138. The one hundred and sixty-eighth session begins Sept. 25, 1933, and ends June 20, 1934. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 31 professors and 65 assistants, lecturers and others, in all, 96. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology, English and French or German. The curriculum covers four years of eight months each. Total fees for each of the four years are, respectively, \$439, \$433, \$433 and \$455. The total registration for 1932-1933 was 136; graduates, 27. The eighty-fourth session begins Sept. 20, 1933, and ends June 6, 1934. The Dean is Martha Tracy, M.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 22 professors and 212 associates, assistants and others, 234 in all. Entrance requirements are two years of collegiate work, including English, chemistry (inorganic and organic), physics and biology. The course of study is four years of eight and one-half months each. The total fees for the four years, respectively, are \$415, \$400, \$400 and \$410. The total registration for 1932-1933 was 262; graduates, 62. The forty-eighth session begins Sept. 25, 1933, and ends June 6, 1934. The Dean is R. R. Huggins, M.D.

SOUTH CAROLINA

Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 38 professors and 42 lecturers, instructors and others, a total of 80. The course covers four years of eight months each. The minimum requirements for admission are graduation from an approved four-year high school and satisfactory completion of two years of collegiate work. The total fees are \$285, \$285, \$290 and \$290 each year, respectively. Fees for nonresidents of state, \$435, \$435, \$440, \$440. Total enrolment for 1932-1933 was 150; graduates, 35. The one hundred and fourth session begins Sept. 28, 1933 and ends June 7, 1934. The Dean is Robert Wilson, M.D.

SOUTH DAKOTA

Vermilion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1907. Coeducational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The faculty numbers 10. The fees are \$100 each year for residents and \$200 for nonresidents. The total registration for 1932-1933 was 45. The twenty-seventh session begins Sept. 20, 1933, and ends June 11, 1934. The administrative head is J. C. Ohlmacher, M.D.

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 847 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor.

In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 84 professors and 118 assistants, instructors and others, a total of 202. Entrance requirements are a high school education and ninety quarter hours of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The fees are: for the first quarter, \$133.50; second to sixth quarters, \$113.50 each; seventh to ninth quarters, \$108.50 each; tenth to twelfth quarters, \$118.50 each. For residents of the state the charge is reduced \$50 each quarter. Total registration for 1932-1933 was 405; graduates, 105. During the academic year 1933-1934 the quarters begin July 12, Sept. 28, Jan. 2 and March 22, and end Sept. 27, Dec. 16, March 21 and June 9. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue North and Heffernan Street.—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 25 professors and 34 instructors, demonstrators, lecturers and others, 59 in all. Two years' work in a college of liberal arts is required for admission. The curriculum covers four years of thirty-two weeks each. Tuition fees are, respectively, \$250, \$250, \$250 and \$260 each year. Total registration for 1932-1933 was 171; graduates, 36. The fifty-eighth session begins Oct. 2, 1933, and ends May 31, 1934. The President is John J. Mullooney, M.D.

VANDEBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First and Edgehill.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September, 1925. The faculty consists of 81 professors and 122 lecturers, instructors, assistants and others, a total of 203. For matriculation, students must be seniors in absentia, who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are \$315, \$315, \$315 and \$320. The total registration for 1932-1933 was 191; graduates, 42. The sixtieth session begins Sept. 26, 1933, and ends June 13, 1934. The Dean is Waller S. Leathers, M.D.

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 64 professors and 67 instructors and assistants, a total of 131. Entrance requirements are two years of collegiate work. The course is four years of eight months each. The fees for each of the four years, respectively, are \$312, \$297, \$282 and \$287. Total registration for 1932-1933 was 348; graduates, 75. The thirty-fourth session begins Oct. 2, 1933, and ends May 28, 1934. The Dean is W. H. Moursund, M.D.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 42 professors and 15 lecturers and instructors, a total of 57. The curriculum covers four years of eight months each. The entrance requirement is two years of collegiate work. The total fees for the four years, respectively, are \$80, \$82, \$74, \$84. There is a matriculation fee of \$30 for each year. Total registration for 1932-1933 was 334; graduates, 70. The forty-third session begins October 2, 1933, and ends May 31, 1934. The Dean is George E. Bethel, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each school year covers thirty-six weeks. Three years of collegiate work is required for admission. The medical faculty consists of 7 professors and 18 lecturers and assistants, a total of 25. The fees are \$190 for the first year and \$200 for the second year. Total registration for 1932-1933 was 65. The twenty-seventh session begins Sept. 25, 1933, and ends June 2, 1934. The Dean is L. L. Daines, M.D.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 31 professors and 37 lecturers, instructors, preceptors and others, a total of 68. Seventy-two hours of collegiate work is required for admission. The course of study covers four years of nine months each. For residents of Vermont the tuition fee is \$300 each session. Nonresidents are charged an additional \$75 each session. A student activity fee of \$30 is charged all students not holding academic degrees or in attendance four years previously, and a \$25 fee for the Doctor's degree. The total registration for 1932-1933 was 150; graduates, 38. The next session begins Sept. 15, 1933, and ends June 18, 1934. The Dean is J. N. Jenne, M.D.

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session 1920-1921. It has a faculty of 31 professors and 38 lecturers, instructors, assistants and others, a total of 69. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of collegiate work devoted to English, mathematics, chemistry, physics and biology. For residents of Virginia the total fees for the four years, respectively, are \$377.50, \$355, \$330 and \$325. Nonresidents are charged an additional \$50 each year. The total registration for 1932-1933 was 247; graduates, 59. The one hundred and tenth session begins Sept. 14, 1933, and ends June 12, 1934. The Dean is J. Carroll Flippin, M.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Clay streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 64 professors and 79 lecturers, instructors and others, a total of 143. The requirements for admission are a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and English. The course covers four years of eight and one-half months each. Total fees for the four years, respectively, are \$307, \$307, \$292 and \$322. Nonresidents are charged an additional \$100 each year. The total registration for 1932-1933 was 346; graduates, 87. The ninety-sixth session begins Sept. 12, 1933, and ends May 29, 1934. The Dean is Lee E. Sutton, Jr., M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902 and gives only the first two years of the medical course. Coeducational since organization. Sixty-six semester hours of collegiate work is required for admission, and the bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 11 professors and 14 lecturers, instructors, assistants and others, a total of 25. Fees: for residents of the state, \$115 each year; for nonresidents, \$365. The total registration for 1932-1933 was 140. The next session begins Sept. 14, 1933, and ends June 12, 1934. The Dean is John N. Simpson, M.D.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 412 North Charter Street.—Organized in 1907. Gave only first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. For matriculation, at least two years in a college of arts and science or an equivalent training is required, including one year of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology, and a semester's work in organic chemistry. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees for each year are, respectively, \$150, \$130, \$103 and \$43. An additional fee of \$200 is charged for nonresidents. The total registration for 1932-1933 was 313; graduates, 50. The twenty-sixth session begins Sept. 20, 1933, and ends June 18, 1934. The Dean is C. R. Bardeen, M.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 169. The minimum entrance requirements are sixty-four semester hours of collegiate work, including courses in physics, chemistry, biology, and a modern foreign language. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the four years, respectively, are \$389, \$379, \$379 and \$364. The total registration for 1932-1933 was 279; graduates, 60. The twenty-second session begins Oct. 2, 1933, and ends June 13, 1934. The Dean is Eben J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 44 professors and 45 instructors, assistants and others, a total of 89. Fees for first year are \$181; for the second, third and fourth years are \$245; for the fifth and sixth years are \$276. The registration for 1932-1933 was 164; graduates, 15. The twenty-first session begins Sept. 25, 1933, and ends May 15, 1934. The Dean is Allan Coats Rankin, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Corner of Emily and Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 45 professors, 82 instructors and assistants, a total of 127. The total fees for the five years, respectively, are \$276, \$266, \$276, \$276 and \$135. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university subsequent to the complete high school

course required for entrance to the latter. The course extends over four years of eight months each and a hospital internship. Total registration for 1932-1933 was 246; graduates, 42. The next session begins Sept. 21, 1933, and ends May 25, 1934. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. Coeducational since 1871. It has a faculty of 23 professors and 45 demonstrators, lecturers and others, a total of 68. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are \$312, \$312, \$317 and \$302 for each year, respectively; \$100 additional registration fee payable by students outside the British Empire. The total registration in regular classes for 1932-1933 was 135; graduates, 29. The next session begins Sept. 12, 1933, and ends May 15, 1934. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. It admitted women from 1880 until 1883. In 1892 the school again became a part of Queen's University. The faculty numbers 56. The fees for the six years are, respectively, \$175.75, \$185.75, \$185.75, \$210.75, \$210.75 and \$240.75. The last includes the fee of \$30 for the M.D., C.M. degrees. The course covers six years of thirty teaching weeks each, the first including courses in physics, chemistry, biology, history or economics or English. The total registration in 1932-1933 was 301; graduates, 45. The next session begins Sept. 23, 1933, and ends May 23, 1934. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Ottawa Ave., London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 73. Two years of premedical college work, including courses in physics, chemistry and biology, is required for admission to a four year medical course—all of which is referred to as a six year medical course. The total fees to residents of Canada for the last four years, respectively, are \$200, \$200, \$208 and \$233. The registration for 1932-1933 was 132; graduates, 37. The next session begins Sept. 21, 1933, and ends June 6, 1934. The Dean is A. B. Macallum, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 it absorbed the Medical Faculty of

Trinity University. Coeducational since 1903. The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English. It has a faculty of 63 professors and 232 lecturers, associates and others, a total of 295. The fees are \$170 for the first year; for the second, \$220; \$285 for the third year; \$220 for the fourth and fifth years, and \$244 for the sixth year. The total registration for 1932-1933 was 818; graduates, 127. The next session begins Sept. 26, 1933, and ends May 19, 1934. The Dean is J. G. FitzGerald, M.D.

Quebec

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. Coeducational since 1919. The course consists of three premedical years, and five medical years of eight months each. The faculty consists of 63 professors and 142 lecturers and others, a total of 205. The total fees for each of the five medical years are \$393. The total registration for 1932-1933 was 475; graduates, 83. The next session begins Sept. 20, 1933 and ends May 1, 1934. The Dean is Charles F. Martin, M.D.

UNIVERSITY OF MONTREAL, FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organized in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by act of Parliament in 1920. A class was graduated in 1843 and in each subsequent year. Coeducational since 1925. The faculty numbers 108. One year of premedical college work is required for admission to a five year medical course. The total fees for each of the five years, respectively, are \$244.85, \$220.35, \$264.65, \$232.70 and \$218.00. The total registration for 1932-1933 was 194; graduates, 49. The next session begins Sept. 15, 1933, and ends June 15, 1934. The Dean is Louis de Lotbinière Harwood, M.D., and the Vice-Dean and Director of Studies is Têlesphore Parizeau, M.D.

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 88. The fees for each of the medical years are \$160, \$170, \$160, \$160 and \$180 for residents of Canada. Nonresidents are charged an extra fee of \$190 each year. One year of premedical college work is required for admission to a five year medical course. Total registration for 1932-1933 was 253; graduates, 47. The next session begins Sept. 11, 1933, and ends May 31, 1934. The Dean is Arthur Rousseau, M.D.

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years only following a minimum of two years' university work, mainly in physics, chemistry and biology. Students require three more years for graduation, making in all seven years from matriculation. The medical faculty includes 8 professors and 4 lecturers and assistants, a total of 12. The fees are \$150 for each year. The total registration for 1932-1933 was 52. The next session begins Sept. 22, 1933, and ends May 11, 1934. The Dean is W. S. Lindsay, M.B.

INSTITUTIONS OFFERING GRADUATE COURSES FOR PHYSICIANS APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

CALIFORNIA

University of California Graduate Division, Berkeley.
Stanford University School of Medicine, San Francisco.

COLORADO

University of Colorado School of Medicine, Denver.

CONNECTICUT

New Haven School of Physical Therapy.
Yale University Graduate School, New Haven.

ILLINOIS

Children's Memorial Hospital, Chicago.
Northwestern University Medical School, Chicago.
Rush Medical College, Chicago.
University of Illinois College of Medicine, Chicago.

INDIANA

Indiana University School of Medicine, Indianapolis.

IOWA

State University of Iowa College of Medicine, Iowa City.

KANSAS

University of Kansas School of Medicine, Kansas City.

LOUISIANA

Tulane University Graduate School of Medicine (New Orleans Polyclinic), New Orleans.

MARYLAND

Johns Hopkins University School of Hygiene and Public Health, Baltimore.
Johns Hopkins University School of Medicine, Baltimore.

MASSACHUSETTS

Harvard School of Public Health, Boston.
Harvard University Medical School, Boston.
Massachusetts Institute of Technology, Cambridge.

MICHIGAN

University of Michigan Medical School, Ann Arbor.
Detroit College of Medicine and Surgery.

MINNESOTA

University of Minnesota, Graduate School of Medicine, Minneapolis-Rochester.

MISSOURI

Washington University School of Medicine, St. Louis.

NEW JERSEY

Physiatric Institute, Morristown.

NEW YORK

Albany Medical College.
University of Buffalo School of Medicine.
Columbia University, New York.
College of Physicians and Surgeons.
New York Post-Graduate Medical School.
Cornell University Medical College, New York.
New York Eye and Ear Infirmary, School of Ophthalmology and Otology, New York.
New York Polyclinic Medical School and Hospital, New York.
New York University, University and Bellevue Hospital Medical College, New York.
New York State Hospital, Ray Brook.
Trudeau School of Tuberculosis, Saranac Lake.

OHIO

University of Cincinnati College of Medicine.
Western Reserve University Graduate School, Cleveland.
Ohio State University College of Medicine, Columbus.

PENNSYLVANIA

University of Pennsylvania Graduate School of Medicine, Philadelphia.

PUERTO RICO

University of Puerto Rico School of Tropical Medicine (under the auspices of Columbia University, New York), San Juan.

TENNESSEE

Vanderbilt University School of Medicine, Nashville.

WISCONSIN

University of Wisconsin Medical School, Madison.

HOSPITALS APPROVED FOR INTERNSHIPS

By the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago

Revised to Aug. 26, 1933

The following general hospitals containing 214,248 beds are considered in position to furnish acceptable internships for medical graduates.

HOSPITALS, 689. INTERNSHIPS, 6,204

Name of Hospital	Location	Number of Beds						Affiliated—For Winter Service	Internships					
		Surgical	Medical	Obstetric	Pediatric	Other	Total		Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
ALABAMA														
Hillman Hospital	Birmingham	220	120	46	38	40	464	No	14	Ap.	12	July	No	Req.
Norwood Hospital	Birmingham	yes	yes	12	16	yes	220	No	2	Ap.	12	July	\$25	Req.
Employees' Hospital of the Tennessee Coal, Iron and Railroad Co.	Fairfield	104	105	22	48	31	310	No	8	Ap.	12	July	\$25	Req.
John A. Andrew Memorial Hospital ¹ (col.)	Tuskegee Institute	30	30	10	10	20	100	No	3	Ap.	12	July & Sept.	\$6	Req.
ARIZONA														
St. Joseph's Hospital	Phoenix	86	43	14	11	16	170	No	1	Ap.	12	July	\$25	Op.
ARKANSAS														
Baptist State Hospital	Little Rock	yes	yes	yes	yes	yes	315	No	3	Ap.	12	July	\$30	None
Little Rock City Hospital	Little Rock	70	45	12	12	..	139	No	4	Ap.	12	July	\$32.50	Req.
St. Vincent's Infirmary	Little Rock	yes	yes	yes	yes	yes	150	No	4	Ap.	12	June	\$25	None
CALIFORNIA														
Fresno County General Hospital	Fresno	124	156	16	60	146	502	No	10	Ap.	12	July	\$25	Req.
Glendale Sanitarium and Hospital	Glendale	30	190	10	no	44	274	No	3	Ap.	12	July	\$35 (a)	None
Loma Linda Sanitarium and Hospital	Loma Linda	yes	yes	yes	yes	yes	124	(3)	3	Ap.	12	July	\$35 (a)	Req.
Seaside Hospital	Long Beach	98	78	45	no	79	300	No	..	Ap.	12	Aug.	\$25	Req.
California Hospital	Los Angeles	87	48	30	28	104	307	(4)	10	Ap.	12	July	\$25	Req.
Cedars of Lebanon Hospital	Los Angeles	100	100	40	10	40	290	No	8	Ap.	12	July	\$25	Req.
Hollywood Clara Barton Memorial Hosp.	Los Angeles	85	38	54	5	134	316	No	5	Ap.	12	July	\$50	None
Los Angeles County General Hospital, Unit No. 1 ¹	Los Angeles	476	855	37	116	40	1,524	No	94	Ex.	12	(1-a)	No	Op.
St. Vincent's	Los Angeles	100	65	45	yes	40	250	No	3	Ap.	12	July	\$25	None
Santa Fe Co	Los Angeles	yes	yes	no	no	yes	150	(5)	6	Ap.	12	July & Sept.	\$22.50	Req.
White Memo	Los Angeles	42	43	22	6	19	132	No	9	Ap.	12	July	\$50 (a)	Req.
U. S. Naval	Mare Island	241	244	no	no	422	907	(6)	..	Both	12	July	(b)	Req.
Alameda Co	Oakland	170	68	25	22	1,265	1,560	(7)	24	Both	12	July	\$25	Req.
Orange County Hospital	Orange	50	52	12	20	128	262	No	7	Ap.	12	July	\$15-\$20	Req.
Pasadena Hospital	Pasadena	105	43	26	12	24	210	(8)	4	Ap.	12	July	\$35	Req.
Sacramento Hospital	Sacramento	110	168	27	31	114	450	No	10	Ap.	12	July	\$50	Req.
San Bernardino County Charity Hospital	San Bernardino	60	40	16	15	184	315	No	7	Ap.	12	July	\$25	Req.
San Diego County General Hospital	San Diego	134	200	35	32	272	673	No	14	Ap.	12	July	\$15-\$20	Req.
U. S. Naval Hospital	San Diego	yes	yes	no	no	yes	964	(9)	5	Both	12	July	(b)	Req.
French Hospital ¹	San Francisco	90	88	12	18	12	220	No	6	Ap.	12	July	\$40 (c)	Req.
Hospital for Children ²	San Francisco	yes	yes	44	48	91	300	No	10	Ap.	12	July	\$10	Req.
Mary's Help	San Francisco	yes	yes	yes	yes	yes	160	No	4	Ap.	12	July	\$25	Req.
Mount Zion	San Francisco	58	57	27	30	26	198	No	6	Ap.	12	June	\$25	Req.
St. Joseph's	San Francisco	118	87	29	12	..	246	No	4	Ap.	12	July	\$30	None
St. Luke's Hospital ¹	San Francisco	yes	yes	yes	18	yes	225	No	4	Ap.	12	July	\$15 (d)	Req.
St. Mary's Hospital ¹	San Francisco	125	89	37	34	..	285	No	5	Ap.	12	July	\$25	Req.
San Francisco Hospital ¹	San Francisco	176	294	34	53	880	1,437	(10)	41	Ap.	12	July	\$10	Op.
Stanford University Hospitals ¹ (including Lane Hospital)	San Francisco	200	200	no	no	no	400	(11)	15	Ap.	12	July	\$30	Req.
U. S. Marine Hospital	San Francisco	40	31	27	38	204	340	No	13	Ap.	12	July	No	Req.
University of California Hospital ¹	San Francisco	260	212	no	no	no	472	(12)	6	Both	12	July	(h)	Op.
Santa Clara County Hospital	San Jose	57	59	53	64	24	287	No	19	Ap.	12	June	\$10	Req.
St. Francis Hospital	Santa Barbara	60	117	26	38	231	472	No	8	Ap.	12	July	\$30	Req.
Santa Barbara Cottage Hospital ¹	Santa Barbara	35	30	15	5	15	100	(13)	2	Ap.	12	July	\$20	Req.
Santa Barbara General Hospital	Santa Barbara	yes	yes	yes	yes	yes	282	(13)	5	Ap.	12	July	\$20	Req.
Santa Barbara General Hospital	Santa Barbara	34	54	9	21	107	235	(14)	3	Ap.	12	July	\$20	None
COLORADO														
Boulder-Colorado Sanitarium and Hosp. ¹	Boulder	13	78	6	4	6	107	(15)	1	Ap.	12	July	\$35	Req.
Beth-El General Hospital	Colorado Springs	68	68	17	7	35	195	No	1	Ap.	12	June	\$15	None
Glockner Sanitarium and Hospital	Colorado Springs	yes	yes	78	..	122	222	No	1	Ap.	12	June	\$25	Op.
St. Francis Hospital and Sanatorium	Colorado Springs	yes	yes	yes	yes	yes	150	No	1	Ap.	12	July	\$30	Op.
Colorado General Hospital ¹	Denver	54	54	25	25	20	178	(16)	9	Ap.	12	July & Aug.	\$25	Req.
Denver General Hospital	Denver	95	65	20	46	233	589	No	12	Ap.	18	Jan. & July	\$30	None
Mersey Hospital	Denver	120	25	25	10	45	225	No	4	Ap.	12	July	\$25	Req.
Presbyterian Hospital ¹	Denver	yes	yes	yes	..	yes	172	No	4	Ap.	12	July	\$25	None
St. Anthony's Hospital	Denver	yes	yes	yes	yes	yes	215	No	4	Ap.	12	July	\$25	None
St. Joseph's Hospital	Denver	82	45	30	6	62	225	No	4	Ap.	12	July	\$30	Req.
St. Luke's Hospital	Denver	125	24	35	25	30	249	No	6	Ap.	12	July	\$25	Op.
CONNECTICUT														
Bridgeport Hospital	Bridgeport	37	40	60	45	218	400	No	8	Ap.	12	July	No	Req.
St. Vincent's Hospital	Bridgeport	70	65	35	46	25	251	(17)	6	Ap.	12	July	\$20	Op.
Danbury Hospital	Danbury	57	22	21	11	23	134	No	2	Ap.	12	July	\$40	None
Hartford Hospital	Hartford	83	60	62	54	501	730	No	15	Ap.	18	Jan. & July	(e)	None
Municipal Hospital	Hartford	40	42	35	35	197	349	No	10	Ap.	12	July	\$10	Req.
St. Francis Hospital	Hartford	180	100	110	20	60	450	(18)	10	Ap.	12	July	No	Req.
Meriden Hospital	Meriden	43	36	18	15	24	136	No	3	Ap.	12	July	\$25 (f)	Op.
Middlesex Hospital	Middletown	yes	yes	yes	yes	yes	160	No	2	Ap.	12	July & Sept.	\$35 (g)	None
New Britain General Hospital	New Britain	95	40	41	31	26	243	No	5	Ap.	12	July	\$30	Req.
Grace Hospital	New Haven	91	68	59	24	44	286	No	9	Both	18	Jan. & July	..	Op.
Hospital of St. Raphael	New Haven	150	25	30	30	25	260	No	6	Ap.	12	July	\$25	None
New Haven Hospital ¹	New Haven	117	91	39	52	205	504	No	31	Ap.	12-20	(1-h)	No	Req.
Lawrence & Memorial Associated Hospitals	New London	22	18	35	34	121	230	No	3	Ap.	12	July	\$25	None
Norwalk General Hospital	Norwalk	yes	yes	yes	yes	yes	165	No	3	Ap.	12	July	\$35 (k)	None
William W. Backus Hospital	Norwich	yes	yes	yes	yes	yes	155	No	2	Ap.	12	July & Sept.	\$25	Req.
Stamford Hospital	Stamford	69	48	42	26	91	266	No	4	Ap.	12	July	\$30	Req.
St. Mary's Hospital	Waterbury	62	56	44	16	96	264	No	4	Ap.	12	July	\$25	Req.
Waterbury Hospital	Waterbury	yes	yes	28	15	34	232	No	7	Ap.	12	July & Oct.	\$25	Req.
DELAWARE														
Delaware Hospital	Wilmington	78	39	24	35	24	200	No	6	Ap.	12	July	\$25	Req.

Numerical and other references will be found on page 707.

Name of Hospital	Location	Number of Beds						Affiliated—For What Service	Internships					Salary per Month	Dispensary Service
		Surgical	Medical	Obstetric	Pediatric	Other	Total		Number	By Examination or Appointment	Length of Service in Months	Begin			
DISTRICT OF COLUMBIA															
Central Disp.	Washington.....	65	41	no	no	154	260	No	17	Ap.	12	July		\$10	Req.
Freedmen's	Washington.....	55	55	44	yes	111	265	No	26	Ap.	12	July & Oct.		\$10	Req.
Gallinger M.	Washington.....	160	160	50	50	244	664	No	16	Ap.	12	July		\$15	None
Garfield Mem.	Washington.....	yes	yes	yes	yes	yes	321	No	9	Ap.	12	July		\$10 (g)	Req.
Georgetown	Washington.....	106	47	39	10	65	267	No	8	Ap.	12	July		\$10	Req.
George West	Washington.....	yes	yes	yes	no	yes	117	No	4	Ap.	12	July		\$15	Req.
Providence Hospital	Washington.....	125	74	26	22	30	277	No	4	Ap.	12	July		\$10	Req.
St. Elizabeths Hosp. (Med. & Surg. Dept.)	Washington.....	50	350	no	no	no	400	(19)	4	Ex.	24	July & Oct.		(b)	Req.
Sibley Memo.	Washington.....	91	30	75	14	100	310	No	6	Ap.	12	July		\$20	Req.
U. S. Naval	Washington.....	84	165	no	no	188	437	(92)	1	Both	12	June		(b)	None
Washington	Washington.....	24	136	10	no	12	182	(125)	1	Ap.	12	July		\$25	Req.
Woma Park	Washington.....	24	136	10	no	12	182	(125)	1	Ap.	12	July		\$25	Req.
FLORIDA															
Duval County Hospital.....	Jacksonville.....	yes	yes	15	30	37	185	No	8	Ap.	24	July		\$20-\$30	Req.
St. Luke's Hospital.....	Jacksonville.....	yes	yes	22	6	50	175	No	3	Ap.	12	July		\$10	Req.
James M. Jackson Memorial Hospital.....	Miami.....	yes	yes	yes	yes	yes	325	No	9	Ap.	12	July		\$25	Req.
Tampa Municipal Hospital ¹	Tampa.....	yes	yes	yes	yes	yes	194	No	5	Ap.	12	July & Sept.		\$25	Req.
GEORGIA															
Grady Hospital (White Unit).....	Atlanta.....	140	75	75	40	..	330	No	22	Ap.	12	July		\$15	Req.
Grady Hospital, Emory University Division (Colored Unit).....	Atlanta.....	104	53	30	20	59	266	No	12	Ap.	12	July		\$15	Req.
Piedmont Hospital.....	Atlanta.....	yes	yes	9	10	yes	116	No	4	Ap.	12	July		\$40	None
University Hospital ¹	Augusta.....	yes	yes	yes	yes	yes	287	No	10	Ap.	12	July		\$10 (f)	Req.
Wesley Memorial Hospital.....	Emory University.....	yes	yes	yes	yes	yes	156	No	5	Ap.	12	July		\$30	None
Macon Hospital.....	Macon.....	yes	yes	yes	yes	yes	160	No	4	Ap.	12	July		\$20 (j)	Req.
ILLINOIS															
Alexian Bros. Hosp. (male patients only).....	Chicago.....	96	70	no	10	80	236	(20)	7	Ap.	12	July		\$50	None
American Hospital ¹	Chicago.....	75	35	20	15	21	166	No	4	Ap.	12	July		\$20	None
Augustana Hospital.....	Chicago.....	215	75	30	30	25	375	No	10	Ap.	18-24	Jan. & July		No	None
Chicago Memorial Hospital.....	Chicago.....	37	27	20	4	20	108	No	4	Ap.	12	July		No	Req.
Chicago Memorial Hospital.....	Chicago.....	50	30	23	21	53	177	No	4	Ap.	12	July		\$25	None
Chicago.....	Chicago.....	620	750	400	450	1,195	3,415	No	96	Ex.	18	Jan. & July		No	None
Chicago.....	Chicago.....	yes	yes	yes	yes	yes	140	No	5	Ap.	12	July		\$10	None
Chicago.....	Chicago.....	45	25	30	7	28	135	No	4	Ap.	12	Jan. & July		\$25	Req.
Chicago.....	Chicago.....	92	30	60	18	60	260	No	6	Ap.	12	July		\$25	None
Chicago.....	Chicago.....	44	32	54	5	5	140	No	4	Ap.	12	Jan. & July		No	Req.
Chicago.....	Chicago.....	yes	yes	32	15	yes	228	No	6	Ap.	12	July		No	Op.
Grant Hospital ¹	Chicago.....	163	34	34	yes	40	271	No	7	Ap.	12	July		No	Req.
Holy Cross.....	Chicago.....	33	25	22	yes	24	104	No	3	Ap.	12	June		\$10	None
Hospital of.....	Chicago.....	117	40	48	15	45	265	No	6	Ap.	18	(1-c)		\$10	None
Illinois Centr.....	Chicago.....	yes	yes	24	no	yes	271	No	8	Ap.	12	(1-c)		No	Req.
Illinois Masonic Hospital ¹	Chicago.....	yes	yes	yes	yes	yes	184	No	6	Ap.	12	July		No	Req.
Lake View.....	Chicago.....	yes	yes	yes	no	yes	140	No	4	Ap.	12	July		\$25	Op.
Lutheran.....	Chicago.....	yes	yes	43	6	yes	215	No	5	Ap.	12	July		\$10	None
Lutheran.....	Chicago.....	yes	yes	33	10	30	205	No	4	Ap.	12	July		\$25	Op.
Mercy Hospital.....	Chicago.....	155	110	50	25	35	375	No	12	Ap.	12	July		No	Req.
Michael Reese Hospital ¹	Chicago.....	yes	yes	yes	yes	yes	651	(21)	36	Ap.	24	Jan. & July		No	Op.
Mother Cabrini Memorial Hospital ¹	Chicago.....	59	21	33	12	43	168	No	4	Ap.	12	July		\$25	None
Chicago.....	Chicago.....	yes	yes	44	yes	yes	204	No	8	Both	12	July		No	Op.
Chicago.....	Chicago.....	54	50	31	10	50	193	No	6	Ap.	12	April & July		\$20	Req.
Chicago.....	Chicago.....	yes	yes	yes	no	yes	213	(22)	6	Ap.	12	(1-d)		No	Req.
Chicago.....	Chicago.....	148	110	65	50	80	453	No	32	Ap.	18	(1-e)		No	Op.
Chicago.....	Chicago.....	yes	yes	yes	yes	yes	110	No	6	Ap.	12	Jan. & June		No	Op.
Chicago.....	Chicago.....	yes	yes	yes	yes	yes	193	No	5	Ap.	12	July		No	Req.
Presbyterian Hospital.....	Chicago.....	39	50	40	30	247	396	No	12	Ex.	12	July		No	Op.
Provident Hospital ¹ (col.).....	Chicago.....	yes	yes	yes	yes	yes	128	No	4	Ap.	12	July		\$15	Op.
Ravenswood Hospital.....	Chicago.....	109	62	57	20	60	308	No	7	Ap.	12	June		No	Req.
Research and Educational Hospital, University of Illinois ¹	Chicago.....	82	46	51	21	30	230	No	6	Ap.	12	July		No	None
Roseland Community Hospital.....	Chicago.....	123	71	38	16	39	287	No	6	Ap.	12	July		No	Req.
St. Anne's Hospital.....	Chicago.....	70	35	35	25	35	200	No	6	Ap.	12	April & July		No	Req.
St. Bernard Hospital.....	Chicago.....	239	125	44	45	206	650	No	24	Both	12	April & July		No	Req.
St. Elizabeth Hospital.....	Chicago.....	112	76	38	36	38	300	No	6	Ap.	12	July		No	None
St. Joseph Hospital.....	Chicago.....	70	50	42	6	42	210	No	5	Ap.	12	March		\$10	None
St. Luke's Hospital.....	Chicago.....	35	88	no	no	27	150	(23)	4	Ap.	12	July		(b)	None
Chicago.....	Chicago.....	45	30	19	6	21	121	No	3	Ap.	12	July		\$15	Req.
Chicago.....	Chicago.....	81	80	no	60	60	281	(24)	30	Ap.	12	(1-e)		No	Req.
Chicago.....	Chicago.....	yes	yes	yes	yes	yes	110	No	6	Ap.	18	(1-f)		No	Req.
Chicago.....	Chicago.....	110	50	22	21	233	No	8	Ap.	18	Jan. & July		No	None	
Chicago.....	Chicago.....	22	39	25	16	25	127	No	5	Ap.	12	July		No	Req.
Women and Children's Hospital.....	Chicago.....	160	30	20	yes	32	172	No	4	Ap.	12	June		No	None
Woodlawn Hospital.....	Chicago.....	121	84	20	25	35	295	No	4	Ap.	12	July		\$25	None
St. Mary's Hospital.....	East St. Louis.....	yes	yes	yes	yes	yes	271	No	12	Ap.	12	July		\$25	Req.
Evanston Hospital.....	Evanston.....	125	80	50	45	50	350	No	8	Ap.	12	(1-c)		\$25	None
St. Francis Hospital.....	Joliet.....	yes	yes	yes	yes	yes	232	No	2	Ex.	12	July		\$25	Op.
St. Joseph's Hospital.....	Oak Park.....	51	40	32	12	40	175	No	6	Ap.	12	July		\$10	Op.
Oak Park Hospital.....	Oak Park.....	194	43	70	20	100	427	No	12	Ap.	12	July & Oct.		No	Req.
Chicago.....	Peoria.....	113	140	25	22	35	335	No	3	Ap.	12	July		\$25	None
Chicago.....	Quincy.....	85	68	18	24	20	215	No	2	Ap.	12	July		\$25	None
Chicago.....	Rockford.....	yes	yes	18	10	yes	110	No	2	Ap.	12	July		\$25-\$35	None
Chicago.....	Rock Island.....	70	44	20	10	24	168	No	1	Ap.	12	Sept.		\$25	Op.
INDIANA															
St. Catherine's Hospital.....	East Chicago.....	yes	yes	yes	yes	yes	350	No	3	Ap.	12	July		\$25 (f)	None
Protestant Deaconess Hospital.....	Evansville.....	yes	yes	yes	yes	yes	181	No	1	Ap.	12	June		\$40	None
Lut.....	Fort Wayne.....	80	43	25	18	23	189	No	2	Ap.	12	July		\$25 (f)	Req.
St.....	Fort Wayne.....	78	63	40	25	84	290	No	4	Ap.	12	July		\$25 (f)	None
St.....	Gary.....	60	96	50	15	29	250	No	4	Ap.	12	July		\$25 (f)	None
St.....	Hammond.....	111	58	38	25	15	250	No	7	Ap.	12	Jan. & July		\$35	None
Indi.....	Indianapolis.....	yes	yes	yes	yes	yes	482	(26)	18	Ap.	12	July		\$15.50	Req.
Indianapolis City Hospital.....	Indianapolis.....	107	196	21	59	135	608	No	26	Ap.	12	July		\$15.50	Req.
Indianapolis.....	Indianapolis.....	135	80	52	30	59	356	No	16	Ap.	12	July		\$15.50	Req.
Indianapolis.....	Indianapolis.....	yes	yes	25	12	yes	295	No	6	Ap.	12	July		\$25	None
Indianapolis.....	La Fayette.....	108	58	20	18	46	250	No	4	Ap.	12	July		\$25	None
Indianapolis.....	Muncie.....	yes	yes	19	12	18	160	No	1	Ap.	12	July		\$15	None
Indianapolis.....	South Bend.....	38	25	25	37	62	187	No	3	Ap.	12	July		\$50	Op.
Indianapolis.....	South Bend.....	52	52	22	21	28	175	No	2	Ap.	12	July		\$50	Op.
IOWA															
Mercy Hospital.....	Cedar Rapids.....	41	39	21	20	20	141	No	1	Ap.	12	July		\$25	Req.
Jennie Edmundson Memorial Hospital.....	Council Bluffs.....	yes	yes	yes	yes	yes	140	No	2	Ap.	12	June		\$25	Op.

Name of Hospital	Location	Number of Beds					Affiliated—For What Service	Internships						
		Surgical	Medical	Obstetric	Pediatric	Other		Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service	
IOWA—Continued														
Mersey Hospital	Council Bluffs	yes	yes	14	14	14	149	(27)	3	Ap.	12	June	\$25 (g)	Req.
Mersey Hospital	Davenport	34	30	20	12	39	135	No	3	Ap.	12	July	\$30	None
Broadlawn—Polk County Public Hospital	Des Moines	yes	yes	16	16	yes	116	(28)	6	Ap.	12	July	\$30	Req.
Iona Lutheran Hospital	Des Moines	75	30	20	15	..	140	No	3	Ap.	12	July	\$30	None
Iowa Methodist Hospital	Des Moines	yes	yes	yes	yes	yes	219	No	6	Ap.	12	July	\$30	None
Mersey Hospital	Des Moines	yes	yes	yes	yes	yes	176	(25)	3	Ap.	12	July	\$35	None
University Hospitals ¹	Iowa City	yes	yes	yes	yes	yes	1,008	No	18	Ap.	12	July	(h)	Req.
St. Joseph's Mercy Hospital	Sioux City	95	47	22	16	20	200	No	3	Ap.	12	July	\$25	None
KANSAS														
Bell Memorial Hospital ¹	Kansas City	64	50	20	42	64	250	(29)	8	Ap.	12	July	\$15	Req.
Bethany Methodist Hospital	Kansas City	yes	yes	20	yes	yes	144	No	3	Ap.	12	July	\$40	None
St. Margaret's Hospital	Kansas City	104	86	15	30	15	250	No	5	Ap.	12	July	\$25	Req.
St. Francis Hospital	Wichita	100	80	25	40	105	350	No	4	Ap.	12	July	\$40	Req.
Wesley Hospital	Wichita	106	36	27	40	26	235	(30)	5	Ap.	12	July	\$35 (j)	Req.
KENTUCKY														
St. Elizabeth Hospital	Covington	150	130	34	27	25	375	No	4	Ap.	12	July	\$40	Req.
	Lexington	98	70	25	15	30	298	(31)	5	Ap.	12	July	\$25	Req.
	Lexington	yes	yes	yes	yes	yes	245	No	3	Ap.	12	July	\$35 (k)	None
	Louisville	120	120	40	40	120	440	(32)	18	Ap.	12	July	\$10	Req.
	Louisville	yes	yes	yes	yes	yes	192	No	1	Ap.	12	July	\$20	Req.
	Louisville	64	19	20	6	48	157	No	2	Ap.	12	July	\$50	None
	Louisville	136	108	28	28	26	326	No	3	Ap.	12	July	\$25	None
	Louisville	yes	yes	16	yes	yes	163	No	2	Ap.	12	July	\$40	None
LOUISIANA														
Charity Hospital ¹	New Orleans	401	246	75	134	953	1,809	No	68	Ap.	12	July	\$10	Req.
Flat-Goedridge Hospital of Dillard University (col.)	New Orleans	41	22	6	6	25	100	No	5	Ap.	12	July	\$10-\$25	Req.
Hotel Dieu Hospital	New Orleans	yes	yes	yes	yes	yes	261	No	5	Ap.	12	July	\$25	None
Mersey Hospital	New Orleans	yes	yes	yes	yes	yes	153	No	2	Ap.	12	July	\$50	Op.
Southern Baptist Hospital ²	New Orleans	yes	yes	36	12	24	222	No	9	Ap.	12	July	\$15	None
Touro Infirmary ¹	New Orleans	yes	yes	yes	yes	yes	373	No	15	Ap.	12	July	\$12	Req.
U. S. Marine Hospital	New Orleans	118	161	no	no	221	500	(25)	17	Ap.	12	July	(b)	Req.
T. E. Schumpert Memorial Sanitarium	Shreveport	yes	yes	yes	yes	yes	162	No	2	Ap.	12	July	\$80	Op.
Shreveport Charity Hospital	Shreveport	yes	yes	yes	yes	yes	324	No	12	Ap.	12	July	\$10	None
MAINE														
Eastern Maine General Hospital	Bangor	yes	yes	yes	yes	yes	173	No	3	Ap.	12	July	\$25-\$50	Req.
Central Maine General Hospital	Lewiston	60	20	24	26	51	181	No	3	Ap.	12	July	No	None
Maine General Hospital	Portland	yes	yes	yes	yes	yes	277	No	6	Ap.	12	July	No	Req.
MARYLAND														
Baltimore City Hospitals ¹	Baltimore	133	97	4	no	1,021	1,255	No	18	Ap.	12	July	\$2-300 yr.	Req.
Church Home and Infirmary ¹	Baltimore	yes	yes	22	yes	19	181	No	7	Ap.	12	July	\$15	Req.
Franklin Square Hospital	Baltimore	yes	yes	yes	yes	yes	129	No	5	Ap.	12	July	\$12-50 (k)	None
Hospital for Women ¹	Baltimore	yes	yes	24	no	24	135	(33)	5	Ap.	12	July	\$15	Req.
Johas Hopkins Hospital ¹	Baltimore	196	145	153	100	312	909	No	64	Ap.	12	Sept.	No	Req.
Maryland General Hospital	Baltimore	yes	yes	yes	yes	yes	228	No	8	Ap.	12	July	\$10	Req.
Mersey Hospital	Baltimore	yes	yes	yes	yes	yes	200	No	9	Ap.	12	July	No	Req.
Provident Hospital and Free Disp. (col.)	Baltimore	yes	yes	yes	yes	yes	129	No	8	Ap.	12	July & Oct.	No	Req.
St. Agnes Hospital	Baltimore	70	54	18	20	40	211	No	8	Ap.	12	July	No	Req.
St. Joseph's Hospital	Baltimore	yes	yes	yes	yes	yes	269	No	12	Ap.	12	July	No	Op.
Sinai Hospital	Baltimore	84	10	10	11	..	115	No	21	Ap.	12	July	No	Req.
South Baltimore	Baltimore	yes	yes	21	50	24	337	No	15	Ap.	12	July	\$25	Req.
Union Memorial	Baltimore	89	84	no	no	46	219	(34)	4	Both	12	July	(b)	Req.
U. S. Marine Hospital	Baltimore	93	67	22	24	69	275	No	14	Ap.	12	July	No	Req.
University Hospital ¹	Baltimore	70	60	21	14	35	200	No	8	Ap.	12	July	\$15	Req.
West Baltimore General Hospital	Baltimore	70	60	21	14	35	200	No	8	Ap.	12	July	\$15	Req.
MASSACHUSETTS														
Beverly Hospital	Beverly	yes	yes	yes	yes	yes	141	No	3	Ap.	12	(1-g)	\$25	None
Beth Israel Hospital	Boston	105	72	no	25	..	202	No	11	Ex.	10-20 1/2	Varies	No	Req.
Boston City Hospital ¹	Boston	374	405	138	166	1,202	2,255	(35)	80	Both	12-24	Varies	No	Req.
Garney Hospital	Boston	68	73	18	23	26	210	No	12	Both	16	(1-h)	No	Req.
Faulkner Hospital	Boston	74	35	21	yes	20	150	No	2	Ap.	12	June	No	None
Long Island Hospital ¹	Boston	70	281	29	123	65	550	No	6	Both	12	July	\$50	Req.
Massachusetts General Hospital	Boston	212	139	no	30	24	405	No	39	Both	12-25	(1-c)	No	Req.
Massachusetts Memorial Hospitals ¹	Boston	yes	yes	32	26	181	331	(124)	12	Ap.	12	Aug.	No	Op.
New England Hospital for Women and Children, ² Roxbury	Boston	35	15	75	60	75	260	No	8	Ap.	12	July & Oct.	No	Req.
Peter Bent Brigham Hospital	Boston	123	124	no	no	..	247	No	23	Ex.	10-16 1/2	(1-d)	No	Req.
St. Elizabeth's Hospital, Brighton	Boston	84	58	59	40	59	300	No	9	Ap.	21	Varies	No	Req.
Brockton Hospital	Brockton	yes	yes	yes	yes	yes	158	No	3	Ap.	12	June	\$25	Req.
Cambridge Hospital	Cambridge	yes	yes	50	75	yes	316	(36)	6	Both	18	(1-e)	No	Req.
U. S. Naval Hospital	Chelsea	yes	yes	no	no	..	833	(37)	12	Both	12	July	(1)	None
Union Hospital	Fall River	yes	yes	35	50	yes	180	No	2	Both	12	July	\$20-\$30	Req.
Providence Hospital	Holyoke	yes	yes	yes	yes	yes	140	No	2	Ap.	12	June	\$25	None
Lawrence General Hospital	Lawrence	yes	yes	20	24	yes	152	No	2	Ap.	12	June	\$10	Req.
Lowell General Hospital	Lowell	yes	yes	30	14	yes	180	No	2	Ex.	12	July	\$25	Req.
St. John's Hospital	Lowell	yes	yes	20	27	24	157	No	3	Both	12	June	No	Req.
St. Joseph's Hospital	Lowell	yes	yes	17	12	yes	111	No	1	Ap.	12	July	\$25	Req.
Lynn Hospital	Lynn	51	30	46	30	46	203	No	3	Ap.	12	June & July	\$500 yr.	Req.
St. Luke's Hospital	New Bedford	yes	yes	yes	yes	yes	320	No	6	Ap.	12	July	No	Req.
Newton Hospital	Newton	66	50	46	16	112	290	No	4	Ex.	12	June & July	No	Req.
House of Mercy Hospital	Pittsfield	25	25	22	26	114	222	No	2	Ap.	12	July	\$40	Op.
Quincy City Hospital ¹	Quincy	yes	yes	54	50	50	290	No	4	Ap.	12	Jan. & July	\$50	Req.
Salem Hospital	Salem	70	21	27	19	30	187	No	3	Both	12	July & Aug.	\$25	Req.
Mersey Hospital	Springfield	170	60	50	50	50	380	(38)	6	Ap.	12	July	\$25	Req.
Springfield Hospital	Springfield	yes	yes	no	yes	yes	166	(39)	9	Both	18	Jan. & July	No	Req.
Waltham Hospital	Waltham	yes	yes	33	61	yes	216	No	3	Ap.	12	Mar. & July	\$25	Op.
Memorial Hospital	Worcester	42	20	30	45	75	215	No	9	Ap.	12	July	No	Req.
Worcester City Hospital	Worcester	105	101	50	30	111	406	No	17	Ex.	24	Varies	No	Req.
Worcester Hahnemann Hospital	Worcester	yes	yes	yes	yes	yes	140	No	2	Ap.	12	July	\$45	None
MICHIGAN														
St. Joseph's Mercy Hospital	Ann Arbor	yes	yes	yes	yes	yes	150	(40)	1	Ap.	12	July	\$20	Req.
University Hospital ¹	Ann Arbor	190	204	176	110	589	1,269	(41)	50	Both	12	July	No	Op.
Lella Y. Post Montgomery Hospital	Battle Creek	yes	yes	yes	yes	yes	200	No	2	Ap.	12	July	No	Req.
Mersey Hospital	Bay City	35	22	20	29	54	160	No	2	Ap.	12	July	\$35-\$50	Req.
City of Detroit Receiving Hospital	Detroit	200	166	no	39	295	700	(42)	32	Ap.	12	July	\$25 (m)	Req.
Evangelical Deaconess Hospital	Detroit	55	30	20	5	25	125	No	3	Ap.	12	July	\$25	Req.
Grace Hospital ¹	Detroit	117	84	40	36	77	354	(42)	24	Ap.	12	July & Sept.	\$25	Req.

Numerical and other references will be found on page 707.

Dr. Robert M. Long Library

U. M. I. Medical College

Name of Hospital	Location	Number of Beds						Affiliated—For What Service	Internships						
		Surgical	Medical	Obstetric	Pediatric	Other	Total		Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service	
MICHIGAN—Continued															
Harper Hospital	Detroit	250	200	100	no	200	750	(43)	37	Ap.	12	July	No	Req.	
Henry Ford Hospital	Detroit	yes	yes	65	125	50	610	No	26	Both	12	Sept.	\$125 (a)	Op.	
Providence Hospital	Detroit	149	30	125	44	102	450	(44)	13	Both	12	July	\$25	Op.	
St. Joseph Mercy Hospital	Detroit	yes	yes	24	48	32	200	No	6	Both	12	July	\$25	Req.	
St. Mary's Hospital	Detroit	165	100	30	50	30	375	(45)	7	Ap.	12	July	\$25	Req.	
Eloise Infirmary	Eloise	373	604	no	no	349	1,326	(42)	16	Ap.	12	July	\$25	Req.	
Hurley Hospital	Flint	130	130	50	33	92	435	No	13	Ap.	12	July	\$25	Req.	
Blodgett Memorial Hospital	Grand Rapids	yes	yes	17	14	18	150	No	3	Ap.	12	July	\$25	Req.	
Butterworth Hospital	Grand Rapids	89	47	51	32	51	270	No	6	Both	12	July	No	Req.	
St. Mary's	Grand Rapids	118	45	35	20	35	233	(46)	4	Ap.	12	July	\$10	Req.	
Highland Park	Highland Park	yes	yes	22	14	65	200	No	6	Ap.	12	July	No	Req.	
W. A. Foote	Jackson	yes	yes	34	11	yes	162	(47)	4	Ap.	12	July & Sept.	\$25	Req.	
Edward W.	Lansing	yes	yes	yes	yes	yes	145	No	4	Ap.	12	July	\$35	Req.	
St. Lawrence Hospital	Lansing	yes	yes	yes	yes	yes	128	No	12	Ap.	12	July	\$45	None	
Hackley Hospital	Muskegon	30	30	17	15	33	125	No	12	Ap.	12	July	\$30	None	
Mercy Hospital	Muskegon	25	25	25	12	37	124	No	12	Ap.	12	July	\$50	Req.	
Saginaw General Hospital	Saginaw	51	38	25	15	27	156	No	3	Ap.	12	July	\$50	Op.	
St. Mary's Hospital	Saginaw	88	30	20	18	20	176	No	2	Ap.	12	July	\$45	Req.	
MINNESOTA															
St. Luke's Hospital	Duluth	93	52	30	26	69	270	No	6	Ap.	12	Jan. & July	\$12.50	Op.	
St. Mary's Hospital	Duluth	94	100	34	30	42	300	No	8	Ap.	12	Jan. & Apr.	\$12.50	Req.	
Asbury Hospital	Minneapolis	78	29	25	no	20	152	No	3	Ap.	12	Jan. & July	\$25	None	
Eitel Hospital	Minneapolis	yes	yes	yes	yes	yes	120	No	12	Ap.	12	Jan. & July	\$25	None	
Fairview Hospital	Minneapolis	yes	yes	30	10	55	225	(48)	5	Ap.	12	Jan. & July	\$25	None	
Lutheran Deaconess	Minneapolis	48	38	30	4	30	150	No	3	Ap.	12	Jan. & July	\$25	None	
Minneapolis General	Minneapolis	yes	yes	yes	yes	yes	653	No	27	Ap.	12	Jan. & July	No	Req.	
Northwestern Hospital	Minneapolis	yes	yes	yes	yes	yes	197	No	4	Ap.	12	Jan. & July	\$25 (g)	None	
St. Barnabas Hospital	Minneapolis	yes	yes	23	9	23	166	No	2	Ap.	12	July	\$25	None	
St. Mary's Hospital	Minneapolis	114	52	30	35	60	300	No	6	Ap.	12	April & July	\$25	Req.	
Swedish Hospital	Minneapolis	yes	yes	42	20	42	313	No	6	Ap.	12	July	\$25	Req.	
University Hospitals	Minneapolis	90	70	25	80	140	405	(49)	21	Ap.	12	July	No	Req.	
Ancker Hospital	St. Paul	yes	yes	yes	yes	yes	1,050	No	24	Ap.	12	July	No	Req.	
Bethesda Hospital	St. Paul	yes	yes	yes	yes	yes	110	No	2	Ap.	12	July	\$25	None	
Charles T. Miller Hospital	St. Paul	yes	yes	21	24	21	216	(50)	6	Ap.	12	July	No	Req.	
Northern Pacific Beneficial Association Hosp.	St. Paul	50	50	10	no	52	162	No	2	Ap.	12	July	\$25	Req.	
St. Joseph's Hospital	St. Paul	120	65	30	31	24	270	(48)	6	Ap.	12	July	\$25	Op.	
MISSOURI															
St. Louis County Hospital	Clayton	50	49	51	23	55	228	No	7	Ap.	12	July	\$25	Op.	
Kansas City General Hospital	Kansas City	115	100	45	30	185	475	No	24	Ap.	12	July	\$25	Req.	
Kansas City General Hospital No. 2 (col.)	Kansas City	yes	yes	yes	yes	yes	303	No	12	Ap.	12	July	\$20	Req.	
Research Hospital	Kansas City	yes	yes	yes	yes	yes	225	No	6	Ap.	12	July	\$25	None	
St. Joseph Hospital	Kansas City	119	66	22	23	26	256	No	5	Ap.	12	July	\$25	None	
St. Luke's Hospital	Kansas City	100	71	27	10	32	240	No	4	Ap.	12	July	\$25	None	
St. Mary's Hospital	Kansas City	yes	yes	yes	yes	yes	181	No	5	Ap.	12	July	\$25	None	
Trinity Lutheran Hospital	Kansas City	yes	yes	31	yes	yes	149	No	4	Ap.	12	July	\$50	None	
Missouri Methodist Hospital	St. Joseph	110	50	15	25	20	220	No	5	Ap.	12	July	\$20	Req.	
St. Joseph's Hospital	St. Joseph	yes	yes	16	12	yes	150	No	2	Ap.	12	July	\$30	None	
Alexian Bros. Hosp. (male patients only)	St. Louis	62	58	no	no	130	250	(51)	5	Ap.	12	July	\$25	Req.	
Barnes Hospital	St. Louis	102	68	no	no	100	270	(52)	32	Ap.	12-18	Jan. & July	No	Op.	
Christian Hospital	St. Louis	40	35	25	10	23	133	No	3	Ap.	12	July	\$50	Req.	
De Paul Hospital	St. Louis	100	60	60	30	35	285	No	8	Ap.	12	July	\$25	Op.	
Evangelical Deaconess Home and Hospital	St. Louis	60	30	20	15	50	175	No	4	Ap.	12	July	\$25 (g)	None	
Jewish Hospital	St. Louis	100	100	33	24	33	290	(33)	11	Ap.	12	July	\$15	Req.	
Lutheran Hospital	St. Louis	yes	yes	yes	yes	yes	184	No	3	Ap.	12	July	\$25 (f)	Req.	
Missouri Baptist Hospital	St. Louis	yes	yes	41	34	yes	500	No	9	Ap.	12	July	\$25	None	
St. Anthony's Hospital	St. Louis	100	44	40	16	50	250	No	5	Ap.	12	July	\$25	None	
St. John's Hospital	St. Louis	127	100	36	39	31	333	No	9	Ap.	12	July	\$25	None	
St. Louis City Hospital	St. Louis	320	240	110	55	235	970	(54)	54	Ap.	12	July	(n)	Op.	
St. Louis City Hospital No. 2 (col.)	St. Louis	100	120	53	50	147	470	No	15	Ap.	12	July	(n)	Op.	
St. Luke's Hospital	St. Louis	yes	yes	yes	yes	yes	210	No	7	Ap.	12	July	\$25	Req.	
St. Mary's Group of Hospitals	St. Louis	135	105	50	20	433	743	(55)	22	Ap.	12	July	No	Req.	
MONTANA															
Murray Hospital	Butte	yes	yes	12	yes	yes	132	No	2	Ap.	12	Jan. & July	\$40	Req.	
St. James Hospital	Butte	71	44	13	13	22	163	No	2	Ap.	12	July	\$50	Req.	
NEBRASKA															
St. Francis Hospital	Grand Island	76	18	16	20	20	130	No	1	Ap.	12	July	\$50	None	
Lincoln General Hospital	Lincoln	41	41	25	25	20	152	No	2	Ap.	12	July	\$25	Op.	
St. Elizabeth's Hospital	Lincoln	yes	yes	yes	yes	yes	200	No	2	Ap.	12	July	\$35	None	
Bishop Clarkson Memorial Hospital	Omaha	yes	yes	13	10	yes	108	No	3	Ap.	12	June	\$25	Op.	
	Omaha	203	103	43	32	52	433	No	10	Ap.	12	July	\$25	Op.	
	Omaha	72	63	18	20	245	418	No	11	Ap.	12	June & July	\$20	Req.	
	Omaha	30	27	26	17	25	125	No	2	Ap.	12	June	\$50	Req.	
	Omaha	35	30	18	12	44	139	No	4	Ap.	12	June	\$25 (o)	None	
	Omaha	yes	yes	27	23	yes	200	No	5	Ap.	12	July	\$25	None	
St. Catherine's Hospital	Omaha	yes	yes	34	yes	yes	177	No	4	Ap.	12	July	\$25	None	
University of Nebraska Hospital	Omaha	40	25	35	40	96	236	No	12	Ap.	12	July	\$25	Req.	
NEW HAMPSHIRE															
Mary Hitchcock Memorial Hospital	Hanover	yes	yes*	25	12	yes	142	No	4	Ap.	12	Jan. & July	\$100 yr.	Req.	
NEW JERSEY															
Atlantic City Hospital	Atlantic City	yes	yes	yes	yes	yes	370	(56)	8	Ap.	12	July	\$25	Req.	
Bayonne Hospital and Dispensary	Bayonne	40	50	26	20	64	200	No	5	Ap.	15	Varies	\$25	Req.	
Cooper Hospital	Camden	100	52	54	25	109	340	No	10	Ap.	12	July	\$10 (g)	Op.	
West Jersey Homeopathic Hospital	Camden	75	46	38	55	53	267	No	8	Ap.	12	June	\$20	Req.	
Homeopathic Hospital of Essex County	East Orange	yes	yes	24	14	yes	120	No	2	Ap.	12	July	\$40	Req.	
Alexian Bros. Hosp. (male patients only)	Elizabeth	60	70	no	9	39	178	(57)	2	Ap.	12	July	\$75	Req.	
Elizabeth General Hospital and Dispensary	Elizabeth	34	35	30	18	89	226	No	8	Ap.	12	July	\$25	Req.	
St. Elizabeth Hospital	Elizabeth	120	55	44	21	20	260	No	5	Ap.	12	July	\$25	Req.	
Englewood Hospital	Englewood	67	23	33	29	60	212	No	8	Ap.	12-18	Jan. & July	\$22	Req.	
Hackensack Hospital	Hackensack	86	65	30	30	44	255	No	7	Ap.	12	July	\$25	Req.	
St. Mary Hospital	Hoboken	145	151	33	43	85	460	No	8	Ap.	12	July & Oct.	\$25	Req.	
Christ Hospital	Jersey City	65	34	22	24	34	209	No	6	Ap.	12	Jan. & July	\$25	Req.	
Jersey City Medical Center	Jersey City	200	200	300	70	430	1,200	(126)	54	Ap.	12-24	(1-q)	No	Req.	
St. Francis Hospital	Jersey City	116	58	17	38	yes	229	(58)	6	Ap.	12	July	\$25	Req.	
Monmouth Memorial Hospital	Long Branch	32	22	13	27	114	208	(59)	9	Ap.	18	Jan. & July	\$25	Req.	
Mountainside Hospital	Montclair	120	82	53	53	32	350	No	7	Ap.	12	July	\$25	Req.	
Morristown Memorial Hospital	Morristown	yes	yes	42	yes	yes	160	No	4	Ap.	12	(1-i)	\$50	Req.	
Hospital of St. Barnabas	Newark	yes	yes	yes	yes	yes	138	No	4	Ap.	12	July	\$45	Req.	
Newark Beth Israel Hospital	Newark	yes	yes	yes	196	44	yes	414	No	12	Both	12	July	\$3.33	Req.

Name of Hospital	Location	Number of Beds						Affiliated—For What Service	Internships					Salary per Month	Dispensary Service	
		Surgical	Medical	Obstetric	Pediatric	Other	Total		Number	By Examination or Appointment	Length of Service in Months	Begin				
NEW JERSEY—Continued																
Newark City Hospital	Newark	279	152	71	94	165	761	No	21	Both	21	(1-c)	No	None		
Newark City Hospital	Newark	yes	yes	25	26	30	157	No	2	Ap.	12	July	\$25	Req.		
Newark City Hospital	Newark	121	28	47	26	59	265	(127)	2	Both	12	July	\$25	Req.		
Newark City Hospital	Newark	52	30	15	20	18	125	No	2	Ap.	12	July	\$30	Req.		
Newark City Hospital	Newark	109	90	no	42	51	300	(58)	2	Ap.	12	July	\$30	Req.		
Newark City Hospital	Brunswick	yes	yes	25	24	yes	187	No	7	Ap.	12	July & Sept.	(o)	Req.		
Newark City Hospital	Brwn.	yes	yes	yes	yes	yes	388	No	7	Ap.	12	July	\$25	Req.		
Newark City Hospital	Brwn.	116	40	20	10	39	225	No	4	Ap.	12	July	\$25	Req.		
Newark City Hospital	Brwn.	58	56	45	30	36	225	No	3	Ap.	12	July	\$50	Req.		
Newark City Hospital	Brwn.	61	12	18	14	12	117	No	4	Ap.	12	July & Oct.	\$15-\$20	Req.		
Newark City Hospital	Brwn.	yes	yes	yes	yes	yes	320	No	6	Ex.	12	July & Oct.	\$25	Op.		
Newark City Hospital	Brwn.	140	92	52	22	85	400	No	6	Ap.	12	July	\$25	Req.		
Newark City Hospital	Brwn.	90	75	35	40	35	275	No	5	Ap.	12	July	\$25	Req.		
Newark City Hospital	Brwn.	yes	yes	42	33	41	222	(60)	5	Ap.	12-18	July	\$50	Req.		
Newark City Hospital	Brwn.	52	31	74	20	73	250	No	5	Ap.	12	July	\$33	Req.		
Newark City Hospital	Brwn.	143	81	29	29	32	314	No	8	Ap.	12	July	\$25	Req.		
Newark City Hospital	Brwn.	26	40	22	8	40	146	No	4	Ap.	12	July	\$37.50	Req.		
Newark City Hospital	Brwn.	yes	yes	28	33	yes	165	(38)	8	Ap.	24	July	\$25	Req.		
NEW YORK																
Albany Hospital	Albany	170	77	33	42	178	500	No	16	Ap.	12	July	No	Req.		
Albany Hospital	Albany	92	18	16	no	15	141	No	5	Ap.	12	July	\$25	Req.		
St. Peter's Hospital	Albany	56	56	no	22	16	150	(61)	5	Ap.	12	July	\$40	Req.		
Auburn City Hospital	Auburn	yes	yes	44	21	..	155	No	2	Ap.	12	July	\$50	Req.		
Binghamton City Hospital	Binghamton	84	69	78	31	115	377	No	9	Ap.	12	July	\$50	Req.		
Binghamton City Hospital	Brooklyn	79	52	50	12	48	241	No	15	Both	18	Jan. & July	No	Req.		
Binghamton City Hospital	Brooklyn	73	49	30	43	30	225	No	14	Both	24	Jan. & July	No	Req.		
Binghamton City Hospital	Brooklyn	118	74	50	yes	80	322	No	14	Both	24	July	No	Op.		
Binghamton City Hospital	Brooklyn	30	8	23	40	29	130	No	2	Ap.	12	June	\$25	Req.		
Coney Island Hospital	Brooklyn	150	56	28	36	30	300	No	20	Both	24	July	No	Req.		
Cumberland Hospital	Brooklyn	106	65	33	59	58	321	No	24	Ex.	24	July	No	Op.		
Greenpoint Hospital	Brooklyn	98	64	60	36	42	300	No	14	Ex.	24	July	No	Req.		
Israel-Zion Hospital	Brooklyn	93	75	96	15	136	415	(62)	24	Ex.	24	Jan. & July	No	None		
Jewish Hospital	Brooklyn	32	64	62	35	48	674	(62)	52	Ex.	30	Jan. & July	No	Req.		
Kings County Hospital	Brooklyn	313	497	128	50	672	1,660	No	72	Ap.	24	(1-e)	No	Req.		
Long Island College Hospital	Brooklyn	139	61	30	36	214	480	(63)	18	Ap.	12	July	(j)	Req.		
Methodist Episcopal Hospital	Brooklyn	185	56	80	16	80	417	No	12	Ap.	24	July	No	None		
Norwegian Lutheran Deaconess Home and Hospital	Brooklyn	52	27	30	15	77	201	No	12	Ap.	12	July	No	Req.		
St. Catherine's Hospital	Brooklyn	109	50	49	44	60	312	No	12	Ap.	24	July	No	Req.		
St. John's Hospital	Brooklyn	50	43	21	26	94	234	No	10	Ex.	24	July	No	Req.		
St. Mary's Hospital	Brooklyn	93	70	42	43	42	290	No	10	Ap.	24	July	No	Req.		
St. Peter's Hospital	Brooklyn	134	76	13	15	26	264	No	6	Both	12	July	No	None		
U. S. Naval Hospital	Brooklyn	265	582	no	no	445	1,092	(66)	12	Both	12	June	(b)	None		
Wyckoff Heights Hospital	Brooklyn	80	50	22	18	30	200	No	9	Both	18	Jan. & July	No	Req.		
Buffalo and Emergency Hospitals of the Sisters of Charity	Buffalo	yes	yes	yes	yes	yes	335	(64)	4	Ex.	12	July	\$25	Req.		
Buffalo City Hospital	Buffalo	188	114	24	52	483	863	No	12	Ap.	12	July	\$50	Req.		
Buffalo General Hospital	Buffalo	94	77	26	30	233	460	No	14	Ap.	12	July	No	Req.		
Deaconess Hospital	Buffalo	yes	yes	36	27	35	225	No	6	Ap.	12	July	\$25	None		
Mersey Hospital	Buffalo	60	34	39	28	38	199	No	4	Ap.	12	July	\$30	Req.		
Millard Fillmore Hospital	Buffalo	65	171	65	yes	yes	301	No	10	Ap.	12	July	\$25	Req.		
Arnot-Ogden Memorial Hospital	Elmira	30	29	32	31	91	213	No	3	Ap.	12	July	\$25 (k)	Req.		
St. Joseph's Hospital	Elmira	58	61	27	34	27	207	No	3	Ap.	12	July	\$25	None		
Ideal Hospital	Elmhurst	42	25	29	17	30	143	No	3	Ap.	12	July	\$50	None		
Flushing Hospital and Dispensary	Flushing	57	25	49	39	78	248	No	8	Ap.	24	July	\$25	Req.		
Mary Immaculate Hospital	Jamaica	yes	yes	50	52	50	319	No	12	Both	24	July	No	Req.		
Charles S. Wilson Memorial Hospital	Johnson City	67	47	27	32	27	200	No	3	Ap.	12	July	\$50	Req.		
St. John's Long Island City Hospital	Long Island City	138	52	93	21	..	304	No	6	Ap.	12	July	No	Req.		
Nassau Hospital	Mineola	96	20	29	30	30	205	No	1	Ap.	18	Jan. & July	\$50	None		
Mount Vernon Hospital	Mount Vernon	66	36	36	7	40	185	No	6	Both	12	Jan. & July	(p)	Op.		
New Rochelle Hospital	New Rochelle	yes	yes	53	13	yes	147	No	6	Ap.	12	July	\$35	Req.		
Bellerue Hospital	New Rochelle	340	363	78	179	1,109	2,060	No	70	Ex.	12-24	Jan. & July	No	Req.		
Beth David Hospital	New York	34	16	12	14	52	128	No	6	Ex.	12	July	No	Req.		
Beth Israel Hospital	New York	yes	yes	yes	yes	yes	433	(65)	24	Both	12-24	(1-c)	No	Op.		
Bronx Hospital	New York	yes	yes	49	19	yes	338	No	13	Both	24	(1-n)	No	Req.		
Columbus Hospital	New York	75	40	40	25	120	300	No	8	Both	12-18	July & Oct.	No	Req.		
Fifth Avenue Hospital	New York	105	52	32	71	40	300	No	9	Ap.	12-15	(1-c)	No	Req.		
Fordham Hospital	New York	255	120	51	59	114	609	No	23	Both	12-24	(1-d)	No	Op.		
French Hospital	New York	120	70	no	no	no	200	No	11	Ap.	24	(1-i)	No	Req.		
Gouverneur Hospital	New York	97	50	22	41	..	210	No	14	Both	12-24	Jan. & July	No	Req.		
Harlem Hospital	New York	95	94	40	56	40	325	No	33	Ex.	24	Jan. & July	No	None		
Hospital for Joint Diseases	New York	30	30	no	10	255	353	(65)	13	Ex.	24	Jan. & July	No	Req.		
Kneckerbocker Hospital	New York	41	35	16	8	100	200	No	8	Both	24	(1-e)	No	Req.		
Lebanon Hospital	New York	51	45	18	20	49	182	No	11	Both	20-28	(1-k)	No	Req.		
Lenox Hill Hospital	New York	56	58	22	48	186	400	No	16	Both	24	Jan. & July	(q)	None		
Lincoln Hospital	New York	51	46	25	44	47	213	No	22	Ex.	24	Jan. & July	No	Req.		
Metropolitan Hospital	New York	214	384	40	226	756	1,620	No	36	Ex.	24	July	No	Req.		
Misericordia Hospital	New York	55	30	75	17	145	322	No	4	Ap.	12	July	\$10	Req.		
Montefiore Hospital for Chronic Diseases	New York	39	128	no	no	536	703	No	11	Ap.	12	Jan. & July	\$25	Req.		
Morrisania City Hospital	New York	155	155	77	80	72	539	No	32	Ex.	24	Jan. & July	No	Op.		
Mount Sinai Hospital	New York	249	254	no	yes	201	704	No	31	Both	12-30	Jan. & July	(r)	None		
New York City Hospital	New York	148	306	108	64	434	1,060	No	27	Ex.	18	Jan. & July	No	Req.		
New York Homeopathic Medical College and Flower Hospital	New York	yes	yes	yes	yes	yes	220	(67)	12	Both	12	July	(h)	Req.		
New York Hospital	New York	175	120	170	71	81	617	No	30	Ap.	12	Sept.	No	Req.		
New York Infirmary for Women and Children	New York	39	16	39	24	37	155	No	5	Ap.	12	(1-un)	\$10	Req.		
New York Polyclinic Medical School and Hospital	New York	91	50	45	16	143	245	No	8	Ap.	24	(1-c)	No	Req.		
New York Presbyterian and Sloane Hospitals	New York	126	63	no	62	154	415	No	29	Both	12-28	Varies	No	Req.		
Roosevelt Hospital	New York	125	134	114	no	421	797	No	44	Both	25	(1-k)	No	Req.		
St. Francis Hospital	New York	137	80	no	29	139	376	No	19	Both	24	Jan. & July	No	Req.		
St. Luke's Hospital	New York	yes	yes	no	25	yes	425	No	8	Ap.	24	Jan. & July	No	None		
St. Vincent's Hospital	New York	174	116	no	40	216	526	No	16	Ex.	24	Jan. & July	No	Req.		
Sydenham Hospital	New York	188	193	50	69	..	435	No	32	Ex.	24	Jan. & July	No	Req.		
U. S. Marine Hospital (Ellis Island)	New York	29	163	15	79	93	201	No	8	Ex.	24	(1-c)	No	None		
United Hospital	Port Chester	76	103	no	7	354	540	(68)	3	Ap.	12	July	(b)	Req.		
Vassar Brothers Hospital	Poughkeepsie	yes	yes	24	yes	24	200	No	5	Ap.	12	July	\$45	Req.		
Jamaica Hospital	Richmond Hill	26	26	40	21	112	225	No	4	Ap.	12	July	\$30 (l)	Req.		
Genesee Hospital	Rochester	yes	yes	yes	yes	yes	107	No	7	Both	18	Jan. & July	\$30	Req.		
Genesee Hospital	Rochester	78	31	20	25	50	214	No	6	Ap.	12	July	\$15	Req.		

Numerical and other references will be found on page 707.

Name of Hospital	Location	Number of Beds					Affiliated—For What Service	Internships					Salary per Month	Dispensary Service
		Surgical	Medical	Obstetric	Pediatric	Other		Number	By Examination or Appointment	Length of Service in Months	Begin			
NEW YORK—Continued														
Highland Hospital	Rochester	yes	yes	yes	yes	yes	100	No	5	Ap.	12	July	\$22.50	Req.
Rochester General Hospital	Rochester	64	38	61	50	122	335	No	5	Ap.	12	July	No	Req.
St. Mary's Hospital	Rochester	94	65	20	yes	27	206	No	5	Ap.	12	July	\$25	Req.
Strong Memorial and Rochester Municipal Hospitals ¹	Rochester	110	142	41	105	162	500	No	29	Ap.	12	July	No	Req.
Ellis Hospital ¹	Schenectady	156	23	59	28	39	285	(69)	8	Ap.	12	July	\$20	Req.
St. Vincent's Hospital ¹	Staten Island	104	60	36	30	..	230	No	6	Both	18	(1-c)	No	Req.
Staten Island Hospital	Staten Island	98	78	58	yes	41	275	No	6	Ap.	18	(1-c)	No	Req.
U. S. Marine Hospital	Staten Island	123	95	no	no	84	302	(70)	7	Both	12	July	(b)	Req.
General Hospital of Syracuse	Syracuse	35	23	27	yes	25	110	No	2	Ap.	12	July	\$25	Req.
Hospital of the Good Shepherd, Syracuse University	Syracuse	yes	yes	no	37	yes	260	(71)	8	Ap.	12	July & Aug.	No	None
St. Joseph Hospital	Syracuse	120	51	29	no	31	231	No	4	Ap.	12	July	\$25	None
Syracuse Memorial Hospital	Syracuse	yes	yes	yes	yes	yes	250	No	8	Ap.	12	July	No	Req.
Samaritan Hospital	Troy	47	20	15	18	72	181	No	3	Ap.	12	(1-g)	\$50	Req.
Troy Hospital	Troy	124	92	yes	30	12	262	(61)	4	Ap.	12	July	\$50	Op.
Grasslands Hospital ¹	Valhalla	171	149	14	44	525	903	No	17	Ap.	18	Jan. & July	\$35 (s)	Req.
St. John's Riverside Hospital	Yonkers	62	29	24	28	67	200	No	5	Ap.	12	Jan. & July	\$50	Req.
St. Joseph's Hospital	Yonkers	51	25	14	10	20	120	(72)	4	Ap.	12	July	\$25	Req.
NORTH CAROLINA														
Duke Hospital ¹	Durham	107	137	20	32	160	436	No	18	Ap.	12	July	No	Req.
Lincoln Hospital ¹ (col.)	Durham	41	36	18	12	1	108	No	3	Ap.	12	June	\$5	Req.
Watts Hospital	Durham	94	20	24	28	44	210	No	4	Ap.	12	July	\$16 (g)	Req.
Highsmith Hospital	Fayetteville	35	28	4	6	31	106	No	1	Ap.	12	July	\$25	Req.
L. Richardson Memorial Hospital ¹ (col.)	Greensboro	19	12	6	10	17	64	No	1	Ap.	12	July	\$10	Req.
Rex Hospital	Raleigh	yes	yes	16	17	yes	126	No	3	Ap.	12	July	\$25 (f)	Req.
St. Agnes Hospital (col.)	Raleigh	52	18	10	10	10	100	No	3	Ap.	12	(1-o)	No	Req.
Park View Hospital ¹	Rocky Mount	yes	yes	yes	yes	yes	100	No	2	Ap.	12	July	\$25	Req.
Davis Hospital	Statesville	yes	yes	yes	yes	yes	132	No	1	Ap.	12	July	No	Req.
James Walker Memorial Hospital	Wilmington	yes	yes	20	30	yes	150	No	4	Ap.	12	July	\$25 (g)	Req.
City Memorial Hospital	Winston-Salem	100	60	25	30	55	260	(73)	6	Ap.	12	July	\$25	Req.
NORTH DAKOTA														
St. John's Hospital	Fargo	52	37	30	15	31	165	No	2	Ap.	12	July	\$30	Op.
OHIO														
City Hospital	Akron	218	55	38	no	39	350	(74)	12	Ap.	12	July	\$20	Req.
St. Thomas Hospital	Akron	62	25	29	15	52	183	No	3	Ap.	12	July	\$20	None
Mercy Hospital	Canton	60	48	32	21	39	200	No	2	Ap.	12	July	\$25	None
Bethesda Hospital ¹	Cincinnati	94	39	40	24	81	278	No	6	Ap.	12	July	\$35 (t)	Req.
Christ Hospital	Cincinnati	180	89	49	no	48	366	(75)	8	Both	12	July	\$25	Req.
Cincinnati General Hospital ¹	Cincinnati	165	165	30	125	420	925	(76)	20	Ap.	12	July	No	Req.
Deaconess Hospital ¹	Cincinnati	81	44	25	yes	25	175	No	6	Ap.	12	Jan. & July	\$25	Op.
Good Samaritan Hospital	Cincinnati	224	83	66	46	116	535	No	12	Ap.	12	July	\$12.50	Req.
Jewish Hospital	Cincinnati	yes	yes	yes	yes	yes	272	No	7	Ap.	12	July	\$20	None
St. Mary Hospital	Cincinnati	97	72	no	31	..	200	(77)	5	Ap.	12	July	\$50	Req.
Charity Hospital	Cleveland	200	52	no	35	20	307	(78)	12	Ap.	12	July	No	Req.
City Hospital ¹	Cleveland	160	160	50	96	1,044	1,510	No	39	Ap.	12	July	No	Req.
Huron Road Hospital ¹	Cleveland	yes	yes	yes	yes	yes	120	No	3	Ap.	12	July	\$50	Req.
Mount Sinai Hospital ¹	Cleveland	yes	yes	45	22	yes	270	(79)	11	Both	12	July	\$10	Req.
St. Alexis Hospital	Cleveland	108	53	no	yes	59	220	(78)	8	Ap.	12	July	\$10	Req.
St. John's Hospital	Cleveland	60	34	28	21	71	214	No	6	Ap.	12	July	\$25	Req.
St. Luke's Hospital	Cleveland	131	83	57	41	82	394	No	14	Ap.	12	July	No	Req.
University Hospitals of Cleveland ¹	Cleveland	189	130	84	100	340	843	(80)	38	Both	12-24	Varies	No	Req.
Woman's Hospital ¹	Cleveland	14	18	31	12	45	120	(81)	3	Ap.	12	July	\$50	None
Grant Hospital	Columbus	135	60	45	30	33	303	No	8	Ap.	12	July	\$25	None
Mount Carmel Hospital	Columbus	156	28	24	6	25	239	(82)	3	Ap.	12	July	\$25 (t)	None
St. Francis Hospital	Columbus	117	41	no	no	no	158	(83)	7	Both	12	July	\$16.66	Req.
" "	Columbus	113	35	25	32	41	276	No	9	Ap.	12	July	\$4	Req.
" "	Columbus	113	75	38	25	..	271	No	8	Ap.	12	July	\$25	Op.
" "	Dayton	yes	yes	46	yes	46	384	No	12	Ap.	12	July	\$25	Req.
" "	Dayton	70	60	35	25	230	420	No	8	Ap.	12	July	\$25	Req.
" "	Elyria	32	18	29	45	30	154	No	2	Ap.	12	July	\$25 (u)	None
Mercy Hospital	Hamilton	65	60	45	25	25	220	No	2	Ap.	12	July	\$25 (u)	Req.
St. Rita's Hospital	Lima	47	25	16	12	16	116	(84)	2	Ap.	12	July	\$25	Op.
Springfield City Hospital	Springfield	57	53	51	44	128	333	No	6	Ap.	12	July	\$25	Req.
Flower Hospital	Toledo	yes	yes	32	yes	yes	125	No	3	Ap.	12	July	\$50	None
Lucas County General Hospital	Toledo	80	84	24	50	67	315	No	6	Ap.	12	July	\$40	Req.
Mercy Hospital	Toledo	yes	yes	20	12	yes	126	No	2	Ap.	12	July	\$25	Op.
St. Vincent's Hospital	Toledo	171	68	45	37	46	387	No	8	Ap.	12	July	\$25	Req.
Toledo Hospital	Toledo	yes	yes	25	22	25	275	No	6	Ap.	12	July	\$25	None
St. Elizabeth's Hospital	Toledo	92	86	36	38	48	300	No	5	Ap.	12	July	\$20 (g)	Req.
Youngstown Hospital	Youngstown	143	109	18	30	100	450	No	16	Ap.	12	July	\$20	Req.
OKLAHOMA														
St. Anthony Hospital	Oklahoma City	yes	yes	yes	yes	yes	415	No	8	Ap.	12	July	\$15	None
" "	Oklahoma City	50	50	17	50	295	462	No	12	Ap.	12	July	\$10 (r)	Req.
" "	Oklahoma City	100	28	22	yes	25	175	No	3	Ap.	12	July	\$25 (r)	None
" "	Tulsa	yes	yes	yes	yes	yes	249	No	4	Ap.	12	July	\$25 (r)	Req.
" "	Tulsa	yes	yes	yes	yes	yes	273	No	4	Ap.	12	July	\$25	Req.
OREGON														
Emanuel Hospital	Portland	138	56	44	yes	66	304	(85)	6	Ap.	12	July	\$20	None
Good Samaritan Hospital ¹	Portland	yes	yes	24	21	24	354	No	7	Ap.	12	July	\$20	None
" "	Portland	140	100	30	30	..	300	(86)	14	Ap.	12	July	\$20	Req.
" "	Portland	45	34	24	8	24	135	No	3	Ap.	12	July	\$75 (n)	Req.
" "	Portland	218	136	36	12	..	402	No	7	Ap.	12	July	\$25	None
PENNSYLVANIA														
" "	Abington	101	59	33	29	45	267	No	7	Ap.	12	July	No	Req.
" "	Allentown	173	58	27	42	25	325	No	8	Ap.	12	July	No	Req.
" "	Allentown	90	42	17	55	96	300	(87)	7	Ap.	12	July	No	Req.
" "	Altoona	40	36	18	10	76	180	No	5	Ap.	12	July	\$25	Req.
" "	Altoona	yes	yes	19	13	yes	135	No	4	Ap.	12	July	\$25	Req.
" "	Bethlehem	91	40	20	24	31	206	No	7	Ap.	12	July	\$15	Req.
" "	Bryn Mawr	yes	yes	yes	yes	yes	263	No	8	Ap.	12	July	No	Req.
" "	Chester	134	50	37	29	25	285	No	6	Ap.	12	July	\$20	Req.
G. F. Gelsinger Memorial Hospital	Danville	yes	yes	yes	yes	yes	195	No	10	Ap.	12	July	(u)	Req.
Easton Hospital	Easton	71	41	19	19	70	220	No	5	Ap.	12	July	\$20	Req.
" "	Erie	56	56	53	39	48	255	No	7	Ap.	12	July	\$25	Req.
" "	Erie	yes	yes	24	36	30	215	No	8	Ap.	12	July	\$25	Req.
" "	Harrisburg	yes	yes	25	16	yes	264	No	8	Ap.	12	July	\$50	Req.
" "	Harrisburg	yes	yes	25	25	yes	265	No	4	Ap.	12	July	\$25	Req.
Conemaugh Valley Memorial Hospital	Johnstown	80	60	33	63	27	263	No	6	Ap.	12	July	No	Req.
Lancaster General Hospital ¹	Lancaster	89	52	55	26	51	273	No	6	Ap.	12	July	\$22.50	Req.
McKeesport Hospital	McKeesport	56	41	40	21	105	263	No	6	Ap.	12	July	\$25	Req.

Name of Hospital	Location	Number of Beds						Affiliated—For What Service	Internships					
		Surgical	Medical	Obstetric	Pediatric	Other	Total		Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
PENNSYLVANIA—Continued														
Jameson Memorial Hospital.....	New Castle.....	yes	yes	52	yes	23	178	No	2	Ap.	12	July	\$20	Req.
Montgomery Hospital.....	Norristown.....	40	20	12	10	43	125	No	4	Ap.	12	July	\$30	Req.
Chestnut Hill Hospital.....	Philadelphia.....	22	22	35	12	23	114	No	4	Ap.	12	July	\$30	Req.
Frankford Hospital.....	Philadelphia.....	60	24	23	12	23	142	No	7	Ap.	12	July	No	Req.
Germantown Dispensary and Hospital.....	Philadelphia.....	110	102	100	35	10	360	No	12	Ap.	24	July	No	Req.
Graduate Hospital of the University of Pennsylvania.....	Philadelphia.....	75	75	35	63	95	348	(88)	16	Both	24	July	No	Req.
Hahnemann Medical College Hospital.....	Philadelphia.....	109	78	64	43	298	592	No	18	Ap.	24	July	No	Req.
Hospital of the Protestant Episcopal Church.....	Philadelphia.....	215	180	no	20	35	450	(89)	16	Ap.	24	Jan. & July	No	Req.
Hospital of the University of Pennsylvania ¹	Philadelphia.....	134	92	61	69	238	594	No	28	Ap.	24	July	No	Req.
Hospital of the Woman's Medical College ²	Philadelphia.....	20	15	21	35	72	173	No	6	Ap.	12	July & Sept.	No	Req.
Jefferson Medical College Hospital.....	Philadelphia.....	137	135	58	48	310	688	No	28	Ex.	24	June	No	Req.
Jewish Hospital ¹	Philadelphia.....	79	50	56	23	215	423	(90)	12	Both	24	June	No	Req.
Lankenau Hospital.....	Philadelphia.....	141	72	70	no	55	298	No	8	Ap.	24	(1-c)	No	Req.
Memorial Hospital.....	Philadelphia.....	40	30	15	15	15	115	No	4	Ap.	12	July	No	Req.
Mercy Hospital ¹ (col.).....	Philadelphia.....	13	20	21	17	36	107	No	5	Ap.	12	July	\$10	Req.
Methodist Episcopal Hospital.....	Philadelphia.....	yes	yes	yes	yes	yes	297	No	8	Ap.	12	July	No	Op.
Misericordia Hospital ¹	Philadelphia.....	65	56	36	60	69	286	No	10	Ap.	12	July	No	Req.
Mount Sinai Hospital.....	Philadelphia.....	yes	yes	yes	yes	yes	316	No	14	Ex.	12	June	No	Op.
Northeastern Hospital.....	Philadelphia.....	35	17	15	20	15	102	No	3	Ap.	12	July	\$30	Req.
Pennsylvania Hospital.....	Philadelphia.....	107	113	125	no	215	560	(91)	18	Ap.	24	Varies	No	Req.
Philadelphia General Hospital ¹	Philadelphia.....	328	460	120	200	1,307	2,515	(90)	60	Both	24	July	No	Req.
Presbyterian Hospital.....	Philadelphia.....	90	66	41	57	171	425	No	11	Both	24	July	No	Req.
St. Agnes Hospital.....	Philadelphia.....	133	104	70	28	60	395	No	10	Ap.	12	July	No	Req.
St. Joseph's Hospital.....	Philadelphia.....	yes	yes	yes	yes	yes	221	(93)	6	Ap.	12	July	No	Req.
St. Luke's and Children's Hospital.....	Philadelphia.....	73	40	46	20	121	300	No	6	Ap.	12	July	No	Req.
St. Mar.....	Philadelphia.....	107	38	40	25	42	252	No	7	Ap.	12	July	No	Req.
Temple.....	Philadelphia.....	yes	yes	63	45	yes	438	(94)	16	Ap.	24	July	No	Req.
U. S. N.....	Philadelphia.....	192	409	no	no	183	784	(95)	12	Both	12	July	(b)	None
Woman's Hospital ²	Philadelphia.....	16	16	26	yes	yes	144	No	6	Ap.	12	Sept.	No	Req.
Women's Homeopathic Hospital.....	Philadelphia.....	50	25	60	25	40	200	No	4	Ex.	12	July	\$20	Req.
Allegheny General Hospital ¹	Pittsburgh.....	145	30	18	58	125	405	No	12	Ap.	12	July	No	Req.
Homeopathic Medical and Surgical Hospital and Dispensary ¹	Pittsburgh.....	yes	yes	yes	yes	yes	310	(96)	8	Ap.	12	July	No	Req.
Mercy Hospital ¹	Pittsburgh.....	335	137	57	96	50	675	(97)	20	Ap.	12	July	No	Req.
Montefiore Hospital ¹	Pittsburgh.....	yes	yes	yes	yes	yes	225	No	7	Both	12	July	\$10	Req.
Passavant Hospital ¹	Pittsburgh.....	yes	yes	yes	yes	yes	150	(98)	5	Ap.	12	July	\$10	Req.
Pittsburgh Hospital.....	Pittsburgh.....	28	28	28	15	101	200	No	5	Ap.	12	July	No	Req.
Presbyterian Hospital ¹	Pittsburgh.....	37	26	yes	21	yes	176	(99)	15	Ap.	12	July	No	Req.
St. Francis Hospital.....	Pittsburgh.....	100	100	30	25	300	555	(96)	14	Ap.	12	July	No	Req.
St. John's General Hospital.....	Pittsburgh.....	77	50	18	57	..	202	No	6	Ap.	12	July	\$25	Req.
St. Joseph Hospital.....	Pittsburgh.....	42	34	8	18	38	140	No	5	Ap.	12	July	No	Req.
St. Margaret Memorial Hospital ¹	Pittsburgh.....	45	45	42	20	..	152	No	4	Ap.	12	July	No	Req.
South Side Hospital.....	Pittsburgh.....	63	40	10	25	87	225	No	6	Ap.	12	July	No	Req.
Western Pennsylvania Hospital ¹	Pittsburgh.....	233	185	59	47	127	651	No	18	Ap.	12	July	No	Req.
Pottsville Hospital ¹	Pottsville.....	36	28	12	10	54	140	No	4	Ap.	12	July	\$25	Req.
Reading Hospital.....	Reading.....	97	56	41	36	38	268	No	8	Ap.	12	July	No	Req.
St. Joseph's.....	Reading.....	73	74	25	18	55	205	No	6	Ap.	12	July	No	Req.
Robert Pack.....	Scranton.....	144	71	23	12	46	273	No	8	Ap.	12	Jan. & July	No	Req.
Hahnemann.....	Scranton.....	28	23	12	12	46	123	No	4	Ap.	12	July	\$13.20	Req.
Moses Taylor Hospital.....	Scranton.....	42	36	no	yes	22	100	(100)	3	Ap.	12	July	\$27	Req.
Scranton State Hospital.....	Scranton.....	73	47	6	34	28	183	No	6	Ap.	12	July	\$23.33	Req.
Uniontown Hospital.....	Uniontown.....	100	77	17	25	..	225	No	5	Ap.	12	July	\$25	Req.
Washington Hospital.....	Washington.....	yes	yes	yes	yes	yes	166	No	5	Ap.	12	July	\$25	Req.
Chester County Hospital.....	West Chester.....	yes	yes	yes	yes	yes	150	No	3	Ap.	12	July	\$25	Req.
Mercy Hospital ¹	Wilkes-Barre.....	47	46	20	35	72	220	No	5	Ap.	12	July	(q)	Req.
Wilkes-Barre General Hospital.....	Wilkes-Barre.....	164	137	57	35	79	472	No	10	Ap.	12	July	No	Req.
Columbia Hospital ¹	Wilkesburg.....	65	55	26	28	20	204	No	5	Ap.	12	July	\$20	Req.
Williamsport Hospital ¹	Williamsport.....	99	69	88	19	..	275	No	5	Ap.	12	July	\$25	Req.
Windber Hospital.....	Windber.....	57	35	10	yes	..	102	No	2	Ap.	12	June	No	Req.
York Hospital.....	York.....	37	56	32	24	21	190	No	6	Ap.	12	July	\$25	Req.
RHODE ISLAND														
Memorial Hospital.....	Pawtucket.....	45	20	30	35	60	190	No	6	Ap.	12	(1-p)	No	Req.
Homeopathic Hospital.....	Providence.....	yes	yes	yes	yes	yes	200	No	4	Ap.	12	July	\$20	Req.
Rhode Island Hospital.....	Providence.....	200	150	no	35	215	600	(101)	24	Ap.	24	Monthly	No	Req.
St. Joseph's Hospital.....	Providence.....	69	23	35	50	136	318	No	6	Ap.	12	July	No	Op.
SOUTH CAROLINA														
Roper Hospital.....	Charleston.....	82	74	30	48	66	300	No	16	Ap.	12	July	\$10	Req.
Columbia Hospital.....	Columbia.....	yes	yes	yes	yes	yes	137	No	3	Ap.	12	July	\$20 (e)	Req.
Greenville City Hospital.....	Greenville.....	yes	yes	17	16	yes	125	No	4	Ap.	12	July	\$25	Req.
Spartanburg General Hospital.....	Spartanburg.....	yes	yes	yes	yes	yes	290	No	5	Ap.	12	July	\$15 (e)	Req.
TENNESSEE														
Baroness Erlanger.....	Chattanooga.....	68	32	20	yes	126	246	(102)	10	Ap.	12	Jan. & July	\$25	Req.
Knoxville General.....	Knoxville.....	yes	yes	yes	yes	yes	255	No	10	Ap.	12	(1-p)	\$25	Req.
Baptist Memorial.....	Memphis.....	yes	yes	yes	yes	yes	400	No	12	Ap.	12	(1-c)	\$25	Req.
Memphis General.....	Memphis.....	yes	yes	yes	yes	yes	425	No	15	Ap.	12	Monthly	\$25	Req.
Methodist Hospital.....	Memphis.....	yes	yes	yes	yes	yes	185	No	2	Ap.	12	Varies	\$25	Req.
St. Joseph's Hospital.....	Memphis.....	yes	yes	yes	yes	yes	266	No	4	Ap.	12	(1-c)	\$25	Req.
George W.....	Nashville.....	60	40	10	21	20	162	No	6	Ap.	12	July	\$25	Req.
Nashville.....	Nashville.....	31	26	18	39	82	195	No	10	Ap.	12	July	\$25	Req.
St. Thom.....	Nashville.....	150	30	20	15	..	225	No	6	Ap.	12	July	\$25	Req.
Vanderbilt University Hospital.....	Nashville.....	74	64	11	30	26	205	(103)	12	Ap.	12	July	\$25	Req.
TEXAS														
Hotel Dieu Hospital.....	Beaumont.....	60	20	15	12	57	174	No	6	Ap.	12	July	\$25	Req.
Baylor Hospital ¹	Dallas.....	168	58	43	33	29	341	No	12	Ap.	12	July	\$25	Req.
Parkland Hospital.....	Dallas.....	yes	yes	yes	yes	yes	125	(104)	15	Ap.	12	July	\$25	Req.
St. Paul's Hospital.....	Dallas.....	120	60	60	20	40	310	No	12	Ap.	12	July	\$25	Req.
El Paso City-County Hospital.....	El Paso.....	22	37	8	12	71	155	No	4	Ap.	12	July	\$25	Req.
Fort Worth.....	Fort Worth.....	yes	yes	yes	yes	yes	115	No	4	Ap.	12	July	\$25	Req.
Fort Worth.....	Fort Worth.....	yes	yes	yes	yes	yes	176	No	4	Ap.	12	July	\$25	Req.
Fort Worth.....	Fort Worth.....	98	32	20	14	16	170	No	4	Ap.	12	July	\$25	Req.
Galveston.....	Galveston.....	140	100	20	20	24	314	No	12	Ap.	12	July	\$25	Req.
Galveston.....	Galveston.....	62	62	15	12	35	186	No	6	Ap.	12	July	\$25	Req.
Galveston.....	Galveston.....	50	50	no	20	..	120	No	6	Ap.	12	July	\$25	Req.
Houston.....	Houston.....	50	67	12	15	..	144	No	6	Ap.	12	July	\$25	Req.
Jefferson Davis Hospital.....	Houston.....	yes	yes	yes	yes	yes	115	No	4	Ap.	12	July	\$25	Req.
Medical and Surgical Hospital.....	San Antonio.....	45	21	16	..	..	82	No	4	Ap.	12	July	\$25	Req.
Robert B. G.....	San Antonio.....	44	44	..	..	..	88	No	4	Ap.	12	July	\$25	Req.
Santa Rosa.....	San Antonio.....	212	160	55	34	42	463	No	12	Ap.	12	July	\$25	Req.

Name of Hospital	Location	Number of Beds					Affiliated—For What Service	Internships						
		Surgical	Medical	Obstetric	Pediatric	Other		Total	Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
TEXAS—Continued														
Gulf, Colorado and Santa Fe Hospital.....	Temple.....	yes	yes	no	no	no	150	(107)	1	Ap.	12	July	\$50	None
Kings Daughters Hospital.....	Temple.....	42	50	8	8	10	118	No	2	Ap.	12	July	\$50	Req.
Scott and White Hospital.....	Temple.....	yes	yes	yes	yes	yes	200	(107)	6	Ap.	12	July	\$50	None
Providence Sanitarium.....	Waco.....	78	44	16	12	..	150	No	2	Ap.	12	July	\$25	Req.
UTAH														
Thomas D. Dee Memorial Hospital.....	Ogden.....	71	39	30	15	30	185	No	3	Ap.	12	Feb. & July	\$25	Req.
Dr. W. H. Groves Latter-Day Saints Hosp.	Salt Lake City.....	273	65	34	20	32	424	No	8	Ap.	12	July	\$25 (g)	Req.
St. Mark's Hospital.....	Salt Lake City.....	60	30	13	6	41	150	No	2	Ap.	12	July	\$35	None
Salt Lake General Hospital.....	Salt Lake City.....	40	56	17	10	86	209	No	7	Ap.	12	July	\$40	Req.
VERMONT														
Bishop DeGoesbriand Hospital ¹	Burlington.....	yes	yes	12	yes	yes	122	No	3	Ap.	12	July	\$25	None
Mary Fletcher Hospital ¹	Burlington.....	yes	yes	30	22	yes	150	No	5	Ap.	12	July & Sept.	\$30	Req.
VIRGINIA														
Hospital of St. Vincent de Paul.....	Norfolk.....	70	36	22	28	94	250	No	5	Ap.	12	July	\$25	Req.
Norfolk Protestant Hospital.....	Norfolk.....	yes	yes	yes	yes	yes	200	No	4	Ap.	12	July	\$25	Req.
U. S. Marine Hospital.....	Norfolk.....	yes	yes	no	no	yes	251	(108)	8	Ap.	12	July	(b)	Req.
Norfolk Naval Hospital.....	Portsmouth.....	yes	yes	no	no	yes	927	(109)	6	Both	12	July	(b)	None
Johnston-Willis Hospital ¹	Richmond.....	36	28	22	12	28	126	No	3	Ap.	12	July	\$25	Req.
Medical College of Virginia, Hospital Division ¹ (Memorial, Dooley, St. Philip and Crippled Children's Hospitals).....	Richmond.....	yes	yes	yes	yes	yes	456	No	20	Ap.	12	July	\$10	Req.
Stuart Circle Hospital.....	Richmond.....	yes	yes	yes	yes	yes	108	No	3	Ap.	12	July	\$30	None
Jefferson Hospital.....	Roanoke.....	yes	yes	yes	yes	yes	119	No	3	Ap.	12	July	\$40	Op.
University of Virginia Hospital ¹	University.....	yes	yes	yes	yes	yes	320	(110)	12	Ap.	12	July	No	Req.
WASHINGTON														
U. S. Naval Hospital.....	Bremerton.....	93	106	no	no	219	418	(111)	..	Ap.	12	July	(b)	None
Columbus Hospital.....	Seattle.....	106	59	35	yes	36	236	No	3	Ap.	12	July	\$25	None
Harborview Hospital.....	Seattle.....	170	115	40	37	95	457	(112)	17	Ap.	18	Jan. & July	\$30	Req.
Providence Hospital.....	Seattle.....	156	96	72	31	57	412	No	6	Ap.	12	July	\$30	None
Seattle General Hospital.....	Seattle.....	60	20	20	no	20	120	(113)	3	Ap.	12	July	\$30	Req.
Swedish Hospital.....	Seattle.....	yes	yes	yes	yes	yes	260	(114)	8	Ap.	12	July & Oct.	\$30	Op.
Virginia Mason Hospital.....	Seattle.....	60	60	24	6	15	165	No	4	Ap.	12	June & Sept.	\$30	Req.
Deaconess Hospital.....	Spokane.....	yes	yes	36	17	yes	257	No	2	Ap.	12	July	\$50	Req.
Sacred Heart Hospital.....	Spokane.....	yes	yes	yes	yes	yes	350	(115)	3	Ap.	12	July	\$50	Req.
St. Luke's Hospital ¹	Spokane.....	54	34	20	42	25	175	No	3	Ap.	12	July	\$50	None
Northern Pacific Beneficial Association Hosp.	Tacoma.....	yes	yes	yes	yes	yes	116	(116)	2	Ap.	12	July	\$25	Req.
Pierce County Hospital.....	Tacoma.....	42	119	yes	10	49	220	(117)	3	Ap.	12	July	\$25	None
St. Joseph's Hospital.....	Tacoma.....	100	72	30	15	113	350	No	2	Ap.	12	July	\$30 (v)	Req.
Tacoma General Hospital.....	Tacoma.....	91	33	25	14	36	209	No	4	Ap.	12	July	\$30	None
WEST VIRGINIA														
Charleston General Hospital.....	Charleston.....	yes	yes	yes	yes	yes	165	(118)	5	Ap.	12	July	\$25	Req.
Chesapeake and Ohio Railway Hospital.....	Huntington.....	54	50	6	6	..	125	(119)	3	Ap.	12	July	\$30	Req.
Ohio Valley General Hospital.....	Wheeling.....	yes	yes	30	35	yes	270	No	6	Ap.	12	July	\$40	Req.
Wheeling Hospital.....	Wheeling.....	185	50	25	40	25	325	No	4	Ap.	12	July	\$40	Req.
WISCONSIN														
St. Elizabeth Hospital.....	Appleton.....	yes	yes	yes	yes	yes	250	No	2	Ap.	12	June & July	\$25	None
St. Joseph's Hospital.....	Ashland.....	50	44	20	16	20	150	No	1	Ap.	12	July	\$25 (g)	None
Luther Hospital.....	Eau Claire.....	57	46	24	yes	28	155	No	2	Ap.	12	July	\$25	None
St. Agnes Hospital.....	Fond du Lac.....	88	57	34	33	38	250	No	3	Ap.	12	July	\$25	None
Meri.....	Janesville.....	yes	yes	50	15	yes	150	No	1	Ap.	12	July	\$25	None
La.....	La Crosse.....	70	50	20	yes	9	149	No	2	Ap.	12	July	\$25	Op.
St.....	La Crosse.....	68	68	20	33	116	315	No	4	Ap.	12	July	\$25	Op.
Mac.....	Madison.....	80	35	20	12	27	174	No	4	Ap.	12	July	\$30	None
Methodist Hospital.....	Madison.....	yes	yes	16	yes	16	120	No	3	Ap.	12	July	\$50	Req.
St. Mary's Hospital.....	Madison.....	yes	yes	yes	yes	yes	180	No	4	Ap.	12	July	\$42.50	Req.
State of Wisconsin General Hospital ¹	Madison.....	154	191	40	40	227	652	No	15	Ap.	12	July	No	Req.
St. Joseph's Hospital.....	Marshfield.....	55	55	15	20	30	175	No	3	Ap.	12	July	\$20	Req.
Columbia Hospital.....	Milwaukee.....	yes	yes	yes	yes	yes	200	(120)	8	Ap.	24	July	\$25	Req.
Evangelical Deaconess Hospital.....	Milwaukee.....	yes	yes	yes	no	yes	176	(121)	3	Ap.	12	June	\$25	None
Milwaukee Hospital "The Passavant".....	Milwaukee.....	yes	yes	34	36	yes	251	No	6	Ap.	12	July	\$25	Req.
Misericordia Hospital.....	Milwaukee.....	50	25	40	35	..	150	No	2	Ap.	12	July	\$25	None
Mount Sinai Hospital.....	Milwaukee.....	yes	yes	yes	no	yes	170	No	5	Ap.	12	July	\$25	Req.
St. Joseph's Hospital ¹	Milwaukee.....	yes	yes	yes	yes	yes	305	No	6	Ap.	12	July	\$25	Req.
St. Luke's Hospital.....	Milwaukee.....	yes	yes	24	yes	yes	117	No	2	Ap.	12	July	\$25	None
St. Mary's Hos.....	Milwaukee.....	136	40	32	18	40	266	No	5	Ap.	12	July	\$25	None
Mersey and St.....	Oshkosh.....	yes	yes	24	16	yes	180	No	3	Ap.	12	July	\$30	Op.
Milwaukee Cou.....	Wauwatosa.....	300	360	60	80	275	1,075	No	38	Ex.	12	July	\$25	Req.
CANAL ZONE														
Gorgas Hospital.....	Ancon.....	300	400	25	80	75	880	No	8	Ap.	12	July	\$115	None
HAWAII														
Queen's Hospital.....	Honolulu.....	yes	yes	yes	60	yes	300	(122)	7	Ap.	18	(1-c)	\$72	Req.
PHILIPPINE ISLANDS														
Philippine General Hospital ¹	Manila.....	170	142	48	54	234	648	(123)	31	Ap. (w)	12	March	No	Req.
FOREIGN														
Peiping Union Medical College Hospital ¹ ...	Peiping, China.....	89	120	70	yes	67	346	No	32 (x)	Ap.	12	July	\$250 yr.	Req.
Shanghai Sanitarium and Clinic.....	Shanghai, China.....	30	120	55	20	25	210	No	2	Ap.	12	Sept.	\$50	Req.

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an internship in Canada, the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Department of Hospital Service of the Canadian Medical Association should be regarded as giving an internship equivalent in educational value to that offered by hospitals in the United States approved for intern training by the Council. It is understood, however, that this statement applies only to hospitals that are unofficially "Approved" under the Canadian plan and does not apply to that group referred to as "Recommended."

The following list of hospitals, revised to Jan. 1, 1933, has been furnished by the Department of Hospital Service:

Name of Hospital	Location	Name of Hospital	Location	Name of Hospital	Location
Victoria General Hospital.....	Halifax, N. S.	St. Joseph's Hospital.....	Toronto, Ont.	MacKellar General Hospital.....	Fort William, Ont.
St. John General Hospital.....	St. John, N. B.	St. Michael's Hospital.....	Toronto, Ont.	Children's Hospital.....	Winnipeg, Man.
Children's Memorial Hosp.....	Montreal, Que.	Toronto East General Hosp.....	Toronto, Ont.	Winnipeg General Hospital.....	Winnipeg, Man.
Hospital St. Luc.....	Montreal, Que.	Toronto General Hospital.....	Toronto, Ont.	St. Boniface Hospital.....	St. Boniface, Man.
Montreal General Hospital.....	Montreal, Que.	Toronto Wes		Regina General Hospital.....	Regina, Sask.
Royal Victoria		Hamilton Gen		Miseric	
Ottawa Civic		St. Joseph's		Royal	
Kingston Gene	t.	Victoria Gene		University of Albe	
Grace Hospital		Metropolitan		St. Paul's Hospital	
Hospital for S		Hotel Dieu of St. Joseph Hosp..	Windsor, Ont.		

3. Patton State Hospital, Patton, psychiatry.
4. Los Angeles Receiving Hospital, emergency service.
5. Children's Hospital, Los Angeles, and City Obstetrical Service.
6. Mt. Zion Hospital and St. Francis Hospital, San Francisco, obstetrics and gynecology.
7. Internship in these hospitals includes service in Highland Hospital, Oakland, Cal., and Arroyo Sanatorium and Del Valle
8. Woman's Hosp.
9. Mercy Hospital, San Diego, obstetrics.
10. Napa State Hospital, Inoma, psychiatry.
11. St. Francis Hospital and the University of California Hospital, San Francisco, obstetrics and pediatrics.
12. San Francisco Hospital, obstetrics, gynecology and pediatrics.
13. Santa Barbara General Hospital, tuberculosis, psychiatry and contagious diseases.
14. St. Francis Hospital and Santa Barbara Cottage Hospital, metabolic diseases.
15. Boulder County Hospital, Boulder, general.
16. Colorado Psychopathic Hospital, Denver.
17. Emergency Hospital, Bridgeport.
18. Hartford Isolation Hospital.
19. Columbia Hospital for Women and Lying-In Asylum, Children's Hospital, and Mental Unit of St. Elizabeths Hospital, Washington, obstetrics, pediatrics and psychiatry.
20. "Nancy Auer Mather Memorial Home" for Infants, Chicago, obstetrics,
21. "Chicago Clinics," tuberculosis,
22. "Chicago Clinics," pediatrics,
23. "Chicago Clinics," gynecology and pediatrics.
24. "Chicago Clinics" includes service in Bobs Roberts Memorial Hospital, Chicago Clinics includes service in Gertrude Dunn Hicks Memorial Hospital and Max Epstein Clinic; also Chicago Lying-In Hospital.
25. Touro Infirmary and Charity Hospital, New Orleans, obstetrics, gynecology and pediatrics.
26. The Indiana University Hospitals include the Robert W. Long Hospital, the James Whitcomb Riley Hospital for Children, the William H. Coleman Hospital for Women and the Indiana Rotary Convalescent Home.
27. St. Bernard's Hospital, Council Bluffs, psychiatry.
28. Broadlawn, Des Moines, tuberculosis and contagious disease units.
29. Watkins Memorial Hospital, Lawrence.
30. Salvation Army Home and Hospital and Sedgewick County Hospital, Wichita, obstetrics and general.
31. Julius Marks Sanatorium, Lexington, tuberculosis.
32. Children's Free Hospital, Louisville, pediatrics.
33. Johns Hopkins Hospital, Baltimore, genito-urinary.
34. University Hospital and Sydenham Hospital, Baltimore, obstetrics, pediatrics and contagious diseases.
35. Boston City Hospital includes the Main Hospital, South Department for Contagious Diseases, Haymarket Square Relief Station, East Boston Relief Station and the Sanatorium Division for Tuberculosis.
36. Evangeline Booth Maternity Hospital and Home, Boston.
37. Boston City Hospital and Boston Floating Hospital, obstetrics and pediatrics.
38. Health Department Hospital, Springfield, isolation and tuberculosis.
39. Shriners Hospital for Crippled Children, Health Department Hospital, City Hospital and Wesson Maternity Hospital, Springfield, orthopedics, isolation and maternity.
40. Merceywood Sanitarium and University Hospital, Ann Arbor, psychiatry and pediatrics.
41. Michigan Mutual Hospital, Detroit, industrial surgery.
42. Herman Kiefer Hospital, Detroit.
43. Herman Kiefer Hospital and Children's Hospital, Detroit, obstetrics, contagious diseases and pediatrics.
44. St. Joseph's Retreat,
45. Children's Hospital,
46. Sunshine Sanatorium, "Hospital, Grand Rapids, tuberculosis"
47. Michigan State Prison Hospital, Jackson, tuberculosis and surgery.
48. Gillette State Hospital for Crippled Children, St. Paul, orthopedics and pediatrics.
49. Glen Lake Sanatorium, Oak Terrace, tuberculosis.
50. Shriners Hospital for Crippled Children, Minneapolis, orthopedics.
51. St. Anthony's Hospital, St. Louis, obstetrics.
52. St. Louis Children's Hospital, Shriners Hospital for Crippled Children, St. Louis Maternity Hospital and City Isolation Hospital, St. Louis.
53. Jewish Sanatorium, Robertson, tuberculosis.
54. Robert Koch Hospital, City Isolation Hospital, City Sanitarium and City Infirmary, St. Louis.
55. St. Mary's Group of Hospitals includes St. Mary's Hospital, Firmin Desloge Hospital and Mt. St. Rose Sanatorium.
56. Municipal Hospital, Atlantic City, and Atlantic County Hospital for Mental Diseases, Northfield, contagious diseases and psychiatry.
57. St. Elizabeth Hospital, Elizabeth, obstetrics.
58. Margaret Hague Maternity Hospital, Jersey City, obstetrics.
59. Allenwood Sanatorium, Allenwood, tuberculosis.
60. "Bergen Pines" Bergen County Hospital, Ridgewood, tuberculosis and contagious diseases.
61. Anthony N. Brady Maternity Hospital, Albany.
62. Kingston Avenue Hospital, Brooklyn, contagious diseases.
63. Charles V. Chapin Hospital, Providence, pediatrics and contagious diseases.
64. St. Mary's Hospital and Providence Retreat, Buffalo, obstetrics and psychiatry.
65. Jewish Maternity Hospital, New York City.
66. Methodist Episcopal Hospital, Brooklyn, obstetrics and gynecology.
67. New York Ophthalmic Clinic, New York City.
68. John E. Berwind Clinic, New York City, obstetrics.
69. Schenectady City Hospital, contagious diseases.
70. St. Vincent's Hospital, Staten Island, obstetrics and pediatrics.
71. Syracuse Memorial Hospital, City Hospital, and Syracuse Psychopathic Hospital, obstetrics
72. Yonkers City Hospital for
73. Forsyth County Tuberculosi
74. Children's Hospital, Akron,
75. Children's Hospital, Cincinnati, pediatrics.
76. Christian R. Holmes Hospital, Hamilton County Tuberculosis Sanatorium, and Hamilton County Home and Chronic Disease Hospital, Cincinnati.
77. St. Mary Hospital, Quincy, Ill., obstetrics.
78. St. Anne's Maternity Hospital, Cleveland.
79. City Hospital, Cleveland, psychiatry and contagious diseases.
80. University Hospitals of Cleveland include the Lakeside Hospital, Maternity Hospital, Babies and Childrens Hospital, Cleveland, and the Rainbow Hospital for Crippled and Convalescent Children, South Euclid.
81. Mt. Sinai Hospital, Cleveland, gynecology.
82. Children's Hospital, Columbus, pediatrics.
83. Starling-Loving University Hospital and Children's Hospital, Columbus, obstetrics and pediatrics.
84. Lima State Hospital and District Tuberculosis Hospital, Lima.
85. Shriners Hospital for Crippled Children, Portland.
86. Doernbecher Memorial Hospital, Portland, pediatrics.
87. Allentown State Hospital, Allentown, psychiatry.
88. Hospital of the University of Pennsylvania, Philadelphia, obstetrics.
89. Kensington Hospital for Women, Philadelphia, obstetrics.
90. Philadelphia Hospital for Contagious Diseases.
91. Children's Hospital, Philadelphia, pediatrics.
92. Columbia Hospital for Women and Lying-In Asylum, Washington, obstetrics.
93. St. Vincent's Hospital for Women and Children, Philadelphia, obstetrics.
94. Shriners Hospital for Crippled Children and Philadelphia Hospital for Contagious Diseases.
95. "Children's Hospital," Philadelphia, obstetrics and pediatrics.
96. "University Hospital," Pittsburgh.
97. "City Hospital and Municipal Hospital," Pittsburgh.
98. "Children's Hospital and Eye and Ear Hospital," Pittsburgh.
99. "Children's Hospital and Eye and ear."
100. Pittston Hospital, Pittston, obstetrics.
101. Providence Lying-In Hospital.
102. Children's Hospital and Pine Breeze Sanatorium, Chattanooga, pediatrics and tuberculosis.
103. Willard Parker Hospital, New York City, contagious diseases.
104. Woodlawn Sanatorium and Bradford Memorial Hospital for Babies, Dallas, tuberculosis and pediatrics.
105. Galveston S
106. John Sealy
107. Gulf, Color
108. Norfolk Protestant Hospital, Florence Crittenton Home and Kings Daughters Clinic, Norfolk, obstetrics and pediatrics.
109. Kings Daughters Hospital, Portsmouth, obstetrics, gynecology and pediatrics.
110. Blue Ridge Sanatorium, Charlottesville, tuberculosis.
111. Children's Orthopedic Hospital and Harborview Hospital, Seattle, pediatrics and obstetrics.
112. Includes service in the Morningstar Sanitarium and Georgetown Hospital, Seattle.
113. Children's Orthopedic Hospital and Florence Crittenton Home, Seattle, orthopedics, obstetrics and pediatrics.
114. Children's Orthopedic Hospital, Seattle, and Finland Sanatorium, Richmond Highlands, pediatrics, orthopedics, tuberculosis and contagious diseases.
115. Edgecliff Sanatorium, Spokane, tuberculosis.
116. Pierce County Hospital, Tacoma, obstetrics.
117. Northern Pacific Beneficial Association Hospital, Tacoma, obstetrics.
118. Hill Crest Sanatorium, Charleston, tuberculosis.
119. Salvation Army Hospital, Huntington.
120. Milwaukee Children's Hospital and South View Isolation Hospital, Milwaukee.
121. Milwaukee Children's Hospital, pediatrics.
122. Knaukeolani Children's Hospital, Honolulu, pediatrics.
123. San Lazaro Hospital, Manila, contagious diseases.
124. Boston State Hospital and Worcester State Hospital, psychiatry.
125. Children's Hospital, Washington, D. C., pediatrics.
126. "Medical Center includes service in Jersey Hague Maternity Hospital and Jersey City Diseases." pediatrics.

HOSPITALS APPROVED FOR RESIDENCIES IN SPECIALTIES

By the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago

Revised to Aug. 26, 1933

The following hospitals are considered in position to furnish acceptable residencies in the several specialties designated, for graduates who have already had a general internship or its equivalent in practice.

	Location	Capacity		Location	Capacity
Anesthesia					
Los Angeles County General Hospital (#1).....	Los Angeles.....	1,524	St. Ann's Maternity Hospital.....	Cleveland.....	118
Indianapolis City Hospital.....	Indianapolis.....	608	St. Luke's Hospital.....	Cleveland.....	394
Indiana University Hospitals.....	Indianapolis.....	482	University Hospitals of Cleveland.....	Cleveland.....	843
Louisville City Hospital.....	Louisville, Ky.....	440	Hospital of the University of Pennsylvania.....	Philadelphia.....	594
Jersey City Medical Center.....	Jersey City.....	1,200	Kensington Hospital for Women.....	Philadelphia.....	103
Newark City Hospital.....	Newark, N. J.....	781	Pennsylvania Hospital.....	Philadelphia.....	560
Grasslands Hospital.....	Valhalla, N. Y.....	903	Philadelphia General Hospital.....	Philadelphia.....	2,515
Cincinnati General Hospital.....	Cincinnati.....	925	Elizabeth Steele Magee Hospital.....	Pittsburgh.....	407
Memphis General Hospital.....	Memphis, Tenn.....	425	Nashville General Hospital.....	Nashville, Tenn.....	196
State of Wisconsin General Hospital.....	Madison.....	652	Vanderbilt University Hospital.....	Nashville, Tenn.....	205
Cardiology					
Indiana University Hospitals.....	Indianapolis.....	482	Baylor Hospital.....	Dallas, Texas.....	341
Irrington House.....	Irrington, N. Y.....	22	University of Virginia Hospital.....	University, Va.....	320
St. Francis Hospital.....	Pittsburgh.....	555	State of Wisconsin General Hospital.....	Madison, Wis.....	652
Contagious Diseases					
Municipal Contagious Disease Hospital.....	Chicago.....	428	Hernia		
Boston City Hospital.....	Boston.....	2,285	New York Society for the Relief of the Ruptured and Crippled.....	New York.....	295
Belmont Hospital.....	Worcester, Mass.....	275	Industrial Surgery		
Herman Kiefer Hospital.....	Detroit.....	1,400	Golden State Hospital.....	Los Angeles.....	73
Essex County Hosp. for Contag. Diseases.....	Belleville, N. J.....	560	Indianapolis City Hospital.....	Indianapolis.....	608
Kingsdon Avenue Hospital.....	Brooklyn.....	410	Leprosy		
City Hospital.....	Cleveland.....	1,510	U. S. Marine Hospital (National Leprosarium).....	Carville, La.....	425
Charles V. Chapin Hospital.....	Providence, R. I.....	265	Malignant Diseases		
South View Isolation Hospital.....	Milwaukee.....	250	Grady Hospital, Albert Steiner Clinic for Cancer and Allied Disease Unit.....	Atlanta, Ga.....	30
Dermatology and Syphilology					
Los Angeles County General Hospital (#1).....	Los Angeles.....	1,524	Collis P. Huntington Memorial Hospital.....	Boston.....	25
Cook County Hospital.....	Chicago.....	3,415	Pondville Hospital.....	Wrentham, Mass.....	115
St. Luke's Hospital.....	Chicago.....	659	Memorial Hospital for the Treatment of Cancer and Allied Diseases.....	New York.....	111
University of Chicago Clinics.....	Chicago.....	281	New York City Cancer Institute Hospital.....	New York.....	202
Massachusetts General Hospital.....	Boston.....	405	Jeanes Hospital.....	Philadelphia.....	72
University Hospital.....	Ann Arbor, Mich.....	1,260	Medicine		
Buffalo City Hospital.....	Buffalo.....	863	Hillman Hospital.....	Birmingham, Ala.....	464
Metropolitan Hospital.....	New York.....	1,020	Cedars of Lebanon Hospital.....	Los Angeles.....	290
Stuyvesant Square Hospital.....	New York.....	100	Los Angeles County General Hospital (#1).....	Los Angeles.....	1,524
City Hospital.....	Cleveland.....	1,510	White Memorial Hospital.....	Los Angeles.....	132
University Hospitals of Cleveland.....	Cleveland.....	843	Las Encinas Sanitarium.....	Pasadena, Calif.....	80
University of Virginia Hospital.....	University.....	320	Hospital for Children.....	San Francisco.....	300
Epilepsy					
Monson State Hospital.....	Palmer, Mass.....	1,171	St. Luke's Hospital.....	San Francisco.....	225
New Jersey State Village for Epileptics.....	Skillman, N. J.....	1,045	San Francisco Hospital.....	San Francisco.....	1,437
Fractures					
Cook County Hospital.....	Chicago.....	3,415	Stanford University Hospitals.....	San Francisco.....	340
Gynecology					
Hillman Hospital.....	Birmingham, Ala.....	464	University of California Hospital.....	San Francisco.....	287
Los Angeles County General Hospital (#1).....	Los Angeles.....	1,524	Santa Clara County Hospital.....	San Jose, Calif.....	472
White Memorial Hospital.....	Los Angeles.....	132	Colorado General Hospital.....	Denver.....	178
San Francisco Hospital.....	San Francisco.....	1,437	New Haven Hospital.....	New Haven, Conn.....	504
Stanford University Hospitals.....	San Francisco.....	340	Gallinger Municipal Hospital.....	Washington, D. C.....	604
University of California Hospital.....	San Francisco.....	287	Grady Hospital, Emory University Division (Colored Unit).....	Atlanta, Ga.....	266
New Haven Hospital.....	New Haven.....	504	University Hospital.....	Augusta, Ga.....	287
Columbia Hospital for Women and Lying-In Asylum.....	Washington, D. C.....	199	City of Chicago Municipal Tuberculosis Sanit. Cook County Hospital.....	Chicago.....	1,240
Gallinger Municipal Hospital.....	Washington, D. C.....	604	Passavant Memorial Hospital.....	Chicago.....	3,415
University Hospital.....	Augusta, Ga.....	287	Presbyterian Hospital.....	Chicago.....	213
Chicago Lying-In Hospital and Dispensary.....	Chicago.....	320	Research and Educational Hospital, University of Illinois.....	Chicago.....	453
Passavant Memorial Hospital.....	Chicago.....	213	St. Luke's Hospital.....	Chicago.....	396
Research and Educational Hospital, University of Illinois.....	Chicago.....	213	University of Chicago Clinics.....	Chicago.....	659
St. Luke's Hospital.....	Chicago.....	396	Evanston Hospital.....	Chicago.....	251
University of Chicago Clinics.....	Chicago.....	659	West Suburban Hospital.....	Chicago.....	271
University Hospitals.....	Chicago.....	281	Indianapolis City Hospital.....	Indianapolis.....	427
Louisville City Hospital.....	Louisville, Ky.....	440	Indiana University Hospitals.....	Indianapolis.....	608
Charity Hospital.....	New Orleans.....	1,809	Louisville City Hospital.....	Louisville, Ky.....	440
Touro Infirmary.....	New Orleans.....	373	Charity Hospital.....	Iowa City.....	1,008
Johns Hopkins Hospital.....	Baltimore.....	909	St. Louis.....	Louisville, Ky.....	440
Mercy Hospital.....	Baltimore.....	290	Charity Hospital.....	New Orleans.....	1,809
St. Joseph's.....	Baltimore.....	290	St. Louis.....	New Orleans.....	373
University of.....	Baltimore.....	275	St. Louis.....	Baltimore.....	756
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	909
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	290
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	211
City of Detroit Receiving Hospital.....	Baltimore.....	290	St. Louis.....	Baltimore.....	269
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	115
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	337
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	275
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	200
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	202
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	2,285
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	530
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	405
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	331
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	247
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	325
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	1,260
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	351
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	750
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	610
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	62
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	435
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	632
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	405
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	1,050
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	270
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	290
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	970
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	470
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	743
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	1,200
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	500
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	321
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	674
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	1,660
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	480
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	863
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
St. Joseph's.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
University of.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
West Baltimore.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Massachusetts.....	Baltimore.....	290	St. Louis.....	Baltimore.....	
University Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
City of Detroit Receiving Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Grace Hospital.....	Baltimore.....	275	St. Louis.....	Baltimore.....	
Harper Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Herman Kiefer Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
Woman's Hospital.....	Baltimore.....	200	St. Louis.....	Baltimore.....	
Minneapolis General Hospital.....	Baltimore.....	311	St. Louis.....	Baltimore.....	
University Hospitals.....	Baltimore.....	200	St. Louis.....	Baltimore.....	

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	Location	Capacity		Location	Capacity
Shriners Hospital for Crippled Children.....	San Francisco.....	60	Cook County Hospital.....	Chicago.....	3,415
University of California Hospital.....	San Francisco.....	287	Michael.....	Chicago.....	654
Cook County Hospital.....	Chicago.....	3,415	St. Luke.....	Chicago.....	654
Research and Educational Hospital, University of Illinois.....	Chicago.....	396	Indiana.....	Indianapolis.....	482
St. Luke's.....	Chicago.....	654	University.....	Iowa City.....	1,008
Indiana University Hospitals.....	Indianapolis.....	482	Louisville City Hospital.....	Louisville, Ky.....	410
University Hospitals.....	Iowa City.....	1,008	Charity Hospital.....	New Orleans.....	1,809
Shriners Hospital for Crippled Children.....	Shreveport, La.....	60	Touro Infirmary.....	New Orleans.....	373
Johns Hopk.....	Baltimore.....	909	Baltimore C.....	Baltimore.....	756
Boston City.....	Boston.....	2,285	Johns Hopkins.....	Baltimore.....	909
Children's an.....	Boston.....	347	Beth Israel.....	Boston.....	202
Massachusetts General Hospital.....	Boston.....	405	Boston City.....	Boston.....	2,285
Memorial Hospital.....	Worcester, Mass.....	215	Children's and Infants' Hospitals.....	Boston.....	347
City of Detroit Receiving Hospital.....	Detroit.....	700	Long Island Hospital.....	Boston.....	550
Gillette State Hospital for Crippled Children.....	St. Paul.....	250	Massachusetts General Hospital.....	Boston.....	405
Shriners Hospital for Crippled Children.....	St. Louis.....	120	Massachusetts Memorial Hospital.....	Boston.....	331
Jersey City Medical Center.....	Jersey City.....	1,200	New England Deaconess Hospital.....	Boston.....	230
Long Island College Hospital.....	Brooklyn.....	480	Peter Bent Brigham Hospital.....	Boston.....	247
Bellevue Hospital.....	New York.....	2,069	University Hospital.....	Ann Arbor, Mich.....	1,269
Hospital for Joint Diseases.....	New York.....	355	City of Detroit Receiving Hospital.....	Detroit.....	700
New York Orthopedic Dispensary and Hosp.....	New York.....	132	Harper Hospital.....	Detroit.....	750
New York Society for the Relief of the Ruptured and Crippled.....	New York.....	295	Ancker Hospital.....	St. Paul.....	1,000
Rochester General Hospital.....	Rochester, N. Y.....	335	Barnes Hospital.....	St. Louis.....	970
New York Reconstruction Home.....	West Haverstraw, N. Y.....	170	St. Louis City.....	Jersey City.....	1,200
Cincinnati General Hospital.....	Cincinnati.....	925	Jersey City.....	Newark, N. J.....	414
Mount Sinai Hospital.....	Cleveland.....	270	Newark Beth.....	Albany, N. Y.....	500
State University Hospitals.....	Oklahoma City.....	462	Albany Hospital.....	Buffalo.....	863
Shriners Hospital for Crippled Children.....	Portland, Ore.....	50	Buffalo City Hospital.....	Buffalo.....	460
Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases.....	Philadelphia.....	144	Buffalo General Hospital.....	New York.....	355
Allegheny General Hospital.....	Pittsburgh.....	405	Hospital for Joint Diseases.....	New York.....	704
Children's Hospital.....	Pittsburgh.....	196	Montefiore Hospital for Chronic Diseases.....	New York.....	704
Texas Scottish Rite Hospital for Crippled Children.....	Dallas, Texas.....	35	Mount Sinai Hospital.....	New York.....	554
University of Virginia Hospital.....	University, Va.....	320	Presbyterian Hospital.....	New York.....	554
State of Wisconsin General Hospital.....	Madison, Wis.....	632	St. Luke's Hospital.....	New York.....	424
Otolaryngology			Willard Parker Hospital.....	Rochester, N. Y.....	500
Hillman Hospital.....	Birmingham, Ala.....	464	Strong Memorial and Rochester Municipal Hospitals.....	Valhalla, N. Y.....	909
Children's Hospital.....	Los Angeles.....	150	Grasslands Hospital.....	Durham, N. C.....	456
Los Angeles County General Hospital (#1).....	Los Angeles.....	1,524	Duke Hospital.....	Cincinnati.....	925
White Memorial Hospital.....	Los Angeles.....	132	Cincinnati General Hospital.....	Cleveland.....	1,510
San Francisco Hospital.....	San Francisco.....	1,437	City Hospital.....	Cleveland.....	843
Stanford University Hospitals.....	San Francisco.....	340	University Hospitals of Cleveland.....	Dayton, Ohio.....	384
Episcopal Eye, Ear and Throat Hospital.....	Washington, D. C.....	100	Miami Valley Hospital.....	Philadelphia.....	594
Grady Hospital, Emory University Division (Colored Unit).....	Atlanta, Ga.....	266	Hospital of the University of Pennsylvania.....	Pittsburgh.....	403
Cook County Hospital.....	Chicago.....	3,415	Allegheny General Hospital.....	Pittsburgh.....	100
Illinois Eye and Ear Infirmary.....	Chicago.....	185	Children's Hospital.....	Pittsburgh.....	653
Passavant Memorial Hospital.....	Chicago.....	213	Mercy Hospital.....	Pittsburgh.....	555
Presbyterian Hospital.....	Chicago.....	453	St. Francis Hospital.....	Providence, R. I.....	600
Research and Educational Hospital, University of Illinois.....	Chicago.....	396	Rhode Island Hospital.....	Memphis, Tenn.....	423
St. Luke's.....	Chicago.....	654	Memphis General Hospital.....	Nashville, Tenn.....	203
Indiana University.....	Indianapolis.....	608	Vanderbilt University Hospital.....		
Indiana University Hospitals.....	Indianapolis.....	482			
University Hospitals.....	Iowa City.....	1,008			
Charity Hospital.....	New Orleans.....	1,809			
Touro Infirmary.....	New Orleans.....	373			
Baltimore Eye, Ear and Throat Charity Hospital.....	Baltimore.....	60			
Johns Hopkins Hospital.....	Baltimore.....	909			
Mercy Hospital.....	Baltimore.....	290			
	Boston.....	202			
	Boston.....	231			
	Ann Arbor, Mich.....	1,269			
	Detroit.....	700			
	Detroit.....	354			
	Minneapolis.....	653			
	Minneapolis.....	405			
	St. Paul.....	1,030			
	St. Louis.....	270			
	St. Louis.....	970			
	Jersey City.....	1,200			
	Newark, N. J.....	781			
	Brooklyn.....	1,660			
	Brooklyn.....	480			
	Buffalo.....	863			
	New York.....	2,069			
	New York.....	50			
	New York.....	214			
	New York.....	704			
	New York.....	175			
	Valhalla, N. Y.....	903			
	Durham, N. C.....	456			
	Statesville, N. C.....	132			
	Cincinnati.....	925			
	Cincinnati.....	355			
	Cleveland.....	394			
	Cleveland.....	843			
	Oklahoma City.....	462			
	Portland, Ore.....	75			
	Pittsburgh.....	55			
	Memphis, Tenn.....	69			
	Richmond, Va.....	456			
	University, Va.....	320			
	Madison, Wis.....	652			
	Wauwatosa, Wis.....	1,075			
Pathology					
Hillman Hospital.....	Birmingham, Ala.....	464			
Los Angeles County General Hospital (#1).....	Los Angeles.....	1,524			
White Memorial Hospital.....	Los Angeles.....	132			
University of California Hospital.....	San Francisco.....	287			
New Haven.....	New Haven, Conn.....	704			
Gallinger.....	Washington, D. C.....	664			
Children's.....	Chicago.....	264			

	Location	Capacity		Location	Capacity
Children's Hospital	Akron, Ohio	110	City Hospital	Cleveland	1,310
Children's Hospital	Cincinnati	210	Cleveland State Hospital	Cleveland	2,460
Cincinnati General Hospital	Cincinnati	925	Columbus State Hospital	Columbus, Ohio	2,800
Charity Hospital	Cleveland	307	Dayton State Hospital	Dayton, Ohio	1,524
City Hospital	Cleveland	1,510	Massillon State Hospital	Massillon, Ohio	2,411
St. Ann's	Cleveland	115	Toledo State Hospital	Toledo, Ohio	2,411
University	Cleveland	847	Allentown State Hospital	Allentown, Pa.	1,466
Children's Hospital	Columbus, Ohio	100	Danville State Hospital	Danville, Pa.	1,893
Women's and Children's Hospital	Toledo, Ohio	180	Norristown State Hospital	Norristown, Pa.	3,414
State University Hospitals	Oklahoma City	462	Philadelphia	Philadelphia	190
Doernbecher Memorial Hospital	Portland, Ore.	75	Pennsylvania Hospital, Department for Mental and Nervous Diseases	Philadelphia	280
Children's Hospital	Philadelphia	126	Philadelphia General Hospital	Philadelphia	2,515
Hospital of the University of Pennsylvania	Philadelphia	294	Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases	Philadelphia	144
Mary J. Drexel Home and Children's Hospital	Philadelphia	51	St. Francis Hospital	Pittsburgh	555
Pennsylvania	Philadelphia	560	Warren State Hospital	Warren, Pa.	1,872
Philadelphia	Philadelphia	2,515	State Hospital for Mental Diseases	Howard, R. I.	2,161
Philadelphia	Pittsburgh	196	Butler Hospital	Providence, R. I.	17
Philadelphia	Chattanooga, Tenn.	84	Charles V. Chapin Hospital	Providence, R. I.	26
Philadelphia	Memphis, Tenn.	425	Yankton State Hospital	Yankton, S. D.	1,637
Philadelphia	Nashville, Tenn.	205	Western State Hospital	Bolivar, Tenn.	1,700
Philadelphia	Dallas, Texas	35	San Antonio State Hospital	San Antonio, Tex.	2,222
Philadelphia	Richmond, Va.	456	Wichita Falls State Hospital	Wichita Falls, Tex.	1,325
Philadelphia	University, Va.	320	University of Virginia Hospital	University, Va.	390
Philadelphia	Seattle	135	Lakin State Hospital (col.)	Lakin, W. Va.	450
Philadelphia	Madison, Wis.	652	State of Wisconsin General Hospital	Madison, Wis.	652
Philadelphia	Milwaukee	150	Milwaukee Sanitarium	Wauwatosa, Wis.	135
Philadelphia	Wauwatosa, Wis.	1,075			
Children			Radiology		
Medical Coli			Los Angeles County General Hospital (#1)	Los Angeles	1,524
University c			San Francisco Hospital	San Francisco	1,437
Children's Orthopedic Hospital			Stanford University Hospitals	San Francisco	370
State of Wisconsin General Hospital			National Jewish Hospital	Denver	240
Milwaukee Children's Hospital			New Haven Hospital	New Haven, Conn.	604
Milwaukee County General Hospital			Gallinger Municipal Hospital	Washington, D. C.	564
			St. Luke's Hospital	Chicago	659
			University of Chicago Clinics	Chicago	281
			University Hospitals	Iowa City	1,098
			Charity Hospital	New Orleans	1,809
			Touro Infirmary	New Orleans	375
			University of Maryland Hospital	Baltimore	273
			Massachusetts General Hospital	Boston	405
			Massachusetts Memorial Hospitals	Boston	331
			Peter Bent Brigham Hospital	Boston	247
			University Hospital	Ann Arbor, Mich.	1,269
			City of Detroit Receiving Hospital	Detroit	700
			St. Louis City Hospital	St. Louis	970
			University of Nebraska Hospital	Omaha	236
			Long Island College Hospital	Brooklyn	450
			Buffalo City Hospital	Buffalo	863
			Bellevue Hospital	New York	2,069
			Beth Israel Hospital	New York	343
			Metropolitan Hospital	New York	1,620
			Montefiore Hospital for Chronic Diseases	New York	703
			Mount Sinai Hospital	New York	704
			Presbyterian Hospital	New York	554
			Willard Parker Hospital	New York	424
			Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	560
			Grasslands Hospital	Valhalla, N. Y.	903
			Duke Hospital	Durham, N. C.	456
			Cincinnati General Hospital	Cincinnati	925
			University Hospitals of Cleveland	Cleveland	843
			Hospital of the University of Pennsylvania	Philadelphia	594
			Philadelphia General Hospital	Philadelphia	2,515
			St. Francis Hospital	Pittsburgh	555
			Medical College of Virginia Hospital Division	Richmond, Va.	456
			University of Virginia Hospital	University, Va.	320
			State of Wisconsin General Hospital	Madison, Wis.	652
			Surgery		
			Hillman Hospital	Birmingham, Ala.	464
			Cedars of Lebanon Hospital	Los Angeles	260
			Los Angeles County General Hospital (#1)	Los Angeles	1,524
			White Memorial Hospital	Los Angeles	112
			Hospital for Children	San Francisco	300
			St. Luke's Hospital	San Francisco	225
			San Francisco Hospital	San Francisco	1,457
			Stanford University Hospitals	San Francisco	1,400
			University of California Hospitals	San Francisco	287
			Santa Clara County Hospital	San Jose, Calif.	478
			Colorado General Hospital	Denver	123
			New Haven Hospital	New Haven, Conn.	504
			Gallinger Municipal Hospital	Washington, D. C.	664
			Grady Hospital, Emory University Division (Colored Unit)	Atlanta, Ga.	200
			University Hospital	Augusta, Ga.	287
			Wesley Memorial Hospital	Emory University, Ga.	150
				Chicago	373
			Augustana Hospital	Chicago	1,240
			City of Chicago Municipal Tuberculosis Sanitarium	Chicago	213
			Passavant Memorial Hospital	Chicago	453
			Presbyterian Hospital		
			Research and Educational Hospital, University of Illinois	Chicago	390
			St. Luke's	Chicago	659
			University	Chicago	281
			Silver Cr	Joliet, Ill.	157
			Indianap	Indianapolis	608
			Indiana	Indianapolis	483
			Intersit	Iowa City	1,098
			Louisville	Louisville, Ky.	440
			Charity Hospital	New Orleans	1,809
			Touro Infirmary	New Orleans	375
			Baltimore City	Baltimore	734
			Johns Hopkins	Baltimore	909
			Mercy Hospital	Baltimore	206
			St. Agnes Hospital	Baltimore	217
			St. Joseph's Hospital	Baltimore	296
			Sinai Hospital	Baltimore	266
			South Baltimore General Hospital	Baltimore	171
					</

	Location	Capacity		Location	Capacity
Union Memorial Hospital.....	Baltimore.....	337	San Francisco Hospital.....	San Francisco.....	1,437
University of Maryland Hospital.....	Baltimore.....	275	Santa Clara County Hospital.....	San Jose, Calif.....	472
West Baltimore General Hospital.....	Baltimore.....	300	Union Printers' Home and Tuberculosis Sanatorium.....	Colorado Springs, Colo.....	356
Beth Israel Hospital.....	Boston.....	202	National Jewish Hospital.....	Denver.....	270
Boston City Hospital.....	Boston.....	2,285	Sanatorium of the Jewish Consumptives' Relief Society.....	Cedarcrest.....	
Children's and Infants' Hospitals.....	Boston.....	347	Meriden Sta.....	Meriden, Conn.....	289
Collis P. Huntington Memorial Hospital.....	Boston.....	25	City of Chic.....	Chicago.....	1,240
Long Island Hospital.....	Boston.....	530	University.....	Chicago.....	281
Massachusetts General Hospital.....	Boston.....	405	Macon Co.....	Decatur, Ill.....	80
Massachusetts Memorial Hospitals.....	Boston.....	331	Cook County Tuberculosis Hospital.....	Oak Forest, Ill.....	634
Peter Bent Brigham Hospital.....	Boston.....	247	Rockford Municipal Sanatorium.....	Rockford, Ill.....	121
Truesdale Hospital.....	Boston.....	147	Boehne Tuberculosis Hospital.....	Evansville, Ind.....	115
Memorial Hospital.....	Fall River, Mass.....	125	Indiana State Sanatorium.....	Rockville, Ind.....	209
University Hospital.....	Worcester, Mass.....	213	Baltimore City Hospitals (Tuberculosis).....	Baltimore.....	182
City of Detroit Receiving Hospital.....	Ann Arbor, Mich.....	1,269	Mt. Pleasant.....	Reisterstown, Md.....	60
Grace Hospital.....	Detroit.....	700	Boston City Hospital.....	Boston.....	2,285
Harper Hospital.....	Detroit.....	354	Sassaquin Sanatorium.....	New Bedford, Mass.....	115
Henry Ford Hospital.....	Detroit.....	750	Westfield State Sanatorium.....	Westfield, Mass.....	306
Herman Kiefer.....	Detroit.....	610	Belmont Hospital.....	Worcester, Mass.....	275
Jefferson Clinic.....	Detroit.....	1,400	University Hospital.....	Ann Arbor, Mich.....	1,269
Blodgett Memor.....	Detroit.....	62	American Legion Hospital.....	Battle Creek, Mich.....	400
St. Mary's Hospital.....	Grand Rapids, Mich.....	150	Herman Kiefer Hospital.....	Detroit.....	1,400
Minneapolis General Hospital.....	Grand Rapids, Mich.....	253	Sunshine Sanatorium.....	Grand Rapids, Mich.....	135
University Hospitals.....	Minneapolis.....	653	Morgan Heights Sanatorium.....	Marquette, Mich.....	87
Ancker Hospital.....	Minneapolis.....	405	William H. Maybury Sanatorium.....	Northville, Mich.....	837
St. Louis County Hospital.....	St. Paul.....	1,050	Nopeming Sanatorium.....	Nopeming, Minn.....	230
Barnes Hospital.....	Clayton, Mo.....	228	Glen Lake Sanatorium.....	Oak Terrace, Minn.....	639
Jewish Hospital.....	St. Louis.....	270	Robert Koch Hospital.....	St. Louis.....	501
St. Louis City Hospital.....	St. Louis.....	290	St. Mary's Group of Hospitals.....	St. Louis.....	743
St. Louis City Hospital No. 2 (col.).....	St. Louis.....	970	New Jersey Sanatorium for Tuberculous Diseases.....	Glen Gardner, N.J.....	494
St. Mary's Group of Hospitals.....	St. Louis.....	470	Essex Mountain Sanatorium.....	Verona, N.J.....	417
Jersey City Medical Center.....	Jersey City.....	1,200	Montefiore Hospital, Bedford Sanatorium.....	Bedford Hills, N.Y.....	220
Albany Hospital.....	Albany, N.Y.....	500	Workmen's Circle Sanatorium.....	Liberty, N.Y.....	100
Cumberland Hospital.....	Brooklyn.....	321	Loomis Sanatorium.....	Loomis, N.Y.....	265
Jewish Hospital.....	Brooklyn.....	674	Metropolitan Life Insurance Company Sanatorium.....	Mt. McGregor, N.Y.....	360
Kings County Hospital.....	Brooklyn.....	1,600	Bellvue Hospital.....	New York.....	2,069
Long Island College Hospital.....	Brooklyn.....	480	Metropolitan Hospital.....	New York.....	1,620
Buffalo City Hospital.....	Buffalo.....	863	Montefiore Hospital for Chronic Diseases.....	New York.....	703
Buffalo General Hospital.....	Buffalo.....	460	Willard Parker Hospital.....	New York.....	424
Millard Fillmore.....	Buffalo.....	301	Samuel W. Bowne Memorial Hospital.....	Poughkeepsie, N.Y.....	185
Clifton Springs.....	Clifton Springs, N.Y.....	458	New York State Hospital.....	Ray Brook, N.Y.....	300
Charles S. Wilce.....	Johnson City, N.Y.....	200	Iola Sanatorium.....	Rochester, N.Y.....	400
Bellevue Hospital.....	New York.....	2,069	Trudeau Sanatorium.....	Trudeau, N.Y.....	185
Beth Israel Hospital.....	New York.....	343	Grasslands Hospital.....	Valhalla, N.Y.....	903
Fifth Avenue Hospital.....	New York.....	300	North Carolina Sanatorium for the Treatment of Tuberculosis.....	Sanatorium, N.C.....	400
Lenox Hill Hospital.....	New York.....	400	Cincinnati General Hospital.....	Cincinnati.....	925
Metropolitan Hospital.....	New York.....	1,620	City Hospital.....	Cleveland.....	1,510
Montefiore Hospital for Chronic Diseases.....	New York.....	703	Ohio State Sanatorium.....	Mt. Vernon, Ohio.....	240
Mount Sinai Hospital.....	New York.....	704	Pennsylvania State Sanatorium for Tuberculosis.....	Cresson, Pa.....	840
New York Post-Graduate Medical School and Hospital.....	New York.....	415	Hamburg State Sanatorium for Tuberculosis.....	Hamburg, Pa.....	534
Presbyterian Hospital.....	New York.....	554	Norristown State Hospital.....	Norristown, Pa.....	3,414
Stuyvesant Square Hospital.....	New York.....	100	Tuberculosis League Hospital.....	Pittsburgh.....	150
Genesee Hospital.....	Rochester, N.Y.....	214	Pennsylvania State Sanatorium for Tuberculosis.....	South Mountain, Pa.....	950
Rochester General Hospital.....	Rochester, N.Y.....	335	Charles V. Chapin Hospital.....	Providence, R.I.....	263
Strong Memorial and Rochester Municipal Hospitals.....	Rochester, N.Y.....	560	Rhode Island State Sanatorium.....	Wallum Lake, R.I.....	483
House of the Good Shepherd.....	Syracuse, N.Y.....	269	Davidson County Tuberculosis Hospital.....	Chattanooga, Tenn.....	225
Grasslands Hospital.....	Valhalla, N.Y.....	903	Stoman Sanatorium.....	Nashville, Tenn.....	300
Duke Hospital.....	Durham, N.C.....	456	Wisconsin State Sanatorium.....	El Paso, Texas.....	110
Watts Hospital.....	Durham, N.C.....	210	Murdale Sanatorium for the Treatment of Tuberculosis.....	El Paso, Texas.....	75
Davis Hospital.....	Statesville, N.C.....	132	Wauwatosa, Wis.....	228	
City I.....	Akron, Ohio.....	350			
Cincinnati Good.....	Cincinnati.....	335			
Jewish Hospital.....	Cincinnati.....	272			
Charity Hospital.....	Cleveland.....	1,510			
City Hospital.....	Cleveland.....	270			
Mount Sinai Hospital.....	Cleveland.....	220			
St. Alexis Hospital.....	Cleveland.....	214			
St. John's Hospital.....	Cleveland.....	304			
St. Luke's Hospital.....	Cleveland.....	843			
St. Joseph's Hospital.....	Columbus, Ohio.....	276			
St. Joseph's Hospital.....	Dayton, Ohio.....	383			
St. Joseph's Hospital.....	Oklahoma City.....	462			
St. Joseph's Hospital.....	Portland, Ore.....	300			
St. Joseph's Hospital.....	Philadelphia.....	348			
St. Joseph's Hospital.....	Philadelphia.....	2,515			
St. Joseph's Hospital.....	Philadelphia.....	144			
St. Joseph's Hospital.....	Pittsburgh.....	405			
St. Joseph's Hospital.....	Pittsburgh.....	535			
St. Joseph's Hospital.....	Pittsburgh.....	651			
St. Joseph's Hospital.....	Knoxville, Tenn.....	285			
St. Joseph's Hospital.....	Memphis, Tenn.....	425			
St. Joseph's Hospital.....	Nashville, Tenn.....	196			
St. Joseph's Hospital.....	Nashville, Tenn.....	205			
St. Joseph's Hospital.....	Dallas, Texas.....	341			
St. Joseph's Hospital.....	Dallas, Texas.....	295			
St. Joseph's Hospital.....	Houston, Texas.....	199			
St. Joseph's Hospital.....	Richmond, Va.....	456			
St. Joseph's Hospital.....	Richmond, Va.....	56			
St. Joseph's Hospital.....	Roanoke, Va.....	119			
St. Joseph's Hospital.....	University, Va.....	320			
St. Joseph's Hospital.....	Charleston, W. Va.....	165			
St. Joseph's Hospital.....	Madison, Wis.....	652			
St. Joseph's Hospital.....	Boston.....	2,285			
St. Joseph's Hospital.....	San Juan, P. R.....	77			
St. Joseph's Hospital.....	San Juan, P. R.....	55			
St. Joseph's Hospital.....	Livermore, Calif.....	180			
St. Joseph's Hospital.....	Los Angeles.....	100			
St. Joseph's Hospital.....	Los Angeles.....	1,524			
St. Joseph's Hospital.....	Monrovia, Calif.....	134			
St. Joseph's Hospital.....	Birmingham, Ala.....	464			
St. Joseph's Hospital.....	Los Angeles.....	1,524			
St. Joseph's Hospital.....	San Francisco.....	340			
St. Joseph's Hospital.....	San Francisco.....	287			
St. Joseph's Hospital.....	Atlanta, Ga.....	266			
St. Joseph's Hospital.....	Chicago.....	630			
St. Joseph's Hospital.....	Chicago.....	281			
St. Joseph's Hospital.....	Chicago.....	1,509			
St. Joseph's Hospital.....	New Orleans.....	373			
St. Joseph's Hospital.....	New Orleans.....	909			
St. Joseph's Hospital.....	Baltimore.....	202			
St. Joseph's Hospital.....	Boston.....	405			
St. Joseph's Hospital.....	Ann Arbor, Mich.....	1,269			
St. Joseph's Hospital.....	Detroit.....	709			
St. Joseph's Hospital.....	St. Paul.....	1,030			
St. Joseph's Hospital.....	St. Louis.....	970			
St. Joseph's Hospital.....	Bayonne, N. J.....	200			
St. Joseph's Hospital.....	Jersey City.....	1,200			
St. Joseph's Hospital.....	Newark, N. J.....	781			
St. Joseph's Hospital.....	Brooklyn.....	1,600			
St. Joseph's Hospital.....	Brooklyn.....	480			
St. Joseph's Hospital.....	Buffalo.....	863			
St. Joseph's Hospital.....	New York.....	2,629			
St. Joseph's Hospital.....	New York.....	1,620			
St. Joseph's Hospital.....	New York.....	617			
St. Joseph's Hospital.....	New York.....	554			
St. Joseph's Hospital.....	Cincinnati.....	925			
St. Joseph's Hospital.....	Columbus, Ohio.....	276			
St. Joseph's Hospital.....	Philadelphia.....	248			
St. Joseph's Hospital.....	Philadelphia.....	594			
St. Joseph's Hospital.....	Pittsburgh.....	675			
St. Joseph's Hospital.....	Pittsburgh.....	320			
St. Joseph's Hospital.....	University, Va.....	925			
St. Joseph's Hospital.....	Wauwatosa, Wis.....	1,075			

1. Including urology.
2. Fellowships.
3. One fellowship; one residentship.

4. Three months' training in pediatric neurology given at Emma Pendleton Bradley Home, East Providence.

5. Including contagious diseases.
6. First six months spent at New York Post-Graduate Medical School.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 26, 1933

POSTOPERATIVE NUTRITIONAL EDEMA

Present-day conceptions of biologic processes and practice in modern therapeutics take into consideration the paramount significance of body fluid. Much effort on the part of investigators has been expended in attempts to evaluate the factors concerned in the maintenance of the so-called water balance in the organism. Although there are many circumstances in which the actual mechanism concerned in the normal movement and abnormal localization of fluid is not clear, it has recently been pointed out by Peters¹ that the fundamental processes involved are essentially physical and chemical in nature. He has repeatedly emphasized the inevitable association of dissolved substances with water in the body. These are predominantly protein, inorganic salts and organic metabolites. In addition to the part played by these substances in nutrition and metabolism, they develop osmotic pressure in solution and thus exert a highly significant influence on the movement of fluid.

The part played by shifts in concentration of electrolytes in changes of water in the body is recognized in such clinical conditions as edema of cardiac and renal origin, and in epidemic and endemic nutritional edema. A recent study by Jones and Eaton² calls attention to postoperative edema, which, for apparently good reasons, they classify as nutritional. They report observations on thirty-four patients, twenty-six of whom showed more or less extensive edema. The surgical intervention in most cases was connected with the gastro-intestinal tract, and the edema appeared in the extremities and in the walls of the stomach and intestine. The nature of the abnormalities treated implied a greater or less degree of previous malnutrition; the necessity for fluid after operation called for large quantities of water, usually given parenterally as physiologic solution of sodium chloride, and the nature of the repair prevented satisfactory postoperative nutrition for some time. When edema appeared, the level of serum pro-

tein was definitely low, possibly as a result of dilution, loss by hemorrhage or increased permeability of the capillaries. It appears that under these circumstances fluid accumulated in the interstitial tissue spaces because of the deficiency of serum proteins, the large intake of water and of salt and the inability to institute such nutritive measures as would tend to replace the depleted body protein.

It is obvious that in the majority of the cases cited by the Boston investigators there is presented a grave problem of clinical management. The necessary preliminary treatment is rendered extremely difficult by the pathologic condition. They suggest a preliminary jejunostomy as a device for building up the nutritive state of the patient prior to the major gastro-intestinal operation, a device which itself denotes the seriousness of the situation. Both physicians and physiologists are aware of the importance of water in the body; the foregoing observations emphasize the many factors involved in maintaining the balance of fluid within normal bounds.

DIVERSITY OR UNIFORMITY IN MEDICAL TRAINING

Times of financial stress have at least the mitigating value that they stimulate analysis of objectives and a critical appraisal of methods. Higher education has not been exempt from this scrutiny and in many instances a radical reorganization has taken place. Medicine, as indicated by the Committee on the Costs of Medical Care and the Commission on Medical Education, is facing new problems, of which none is of more far-reaching significance than the determination of the kind and extent of practice for which the medical student should be trained.

Dr. Alan Gregg of the Rockefeller Foundation, at the last Annual Congress on Medical Education and Licensure, reviewed the fundamental characteristics of medical education in Europe, emphasizing the totally different concepts that prevail in the northern countries from those embodied in the customs of the nations farther south. Where population is sparse, cities few and transportation poorly developed, medical practice is in the hands of the general practitioner who is dependent on his own resources. Under these conditions a longer and more comprehensive training is required, as in the Scandinavian countries, where the minimum period is from seven to nine years. In France, Germany, Austria and Italy, on the other hand, population is dense, cities are numerous, transportation is facile and a medical curriculum of five and a half years is legally sufficient, because it is well known that the recent graduate will be compelled by economic and social forces to work for five or ten years under supervision before he will be called on to practice on his own responsibility.

In the United States it has been tacitly assumed that a single sort of training for the practice of medicine

1. Peters, J. P.: The Distribution and Movement of Water and Solutes in the Human Body, *Yale J. Biol. & Med.* 5:431 (May) 1933.
2. Jones, C. M., and Eaton, Frances B.: Postoperative Nutritional Edema, *Arch. Surg.* 27:159 (July) 1933.

should satisfy the needs of the whole country and that legal standards should be as nearly uniform as possible. May it not be possible that the overgrowth of specialism, now so bitterly complained of, and the fadeout of the general practitioner, are both in some measure due to an earnest endeavor to fit all medical education to a procrustean bed? Should the less densely populated states follow the example of northern Europe and raise the standards of medical education and licensure?

SOME EFFECTS OF OVERDOSAGE WITH VIOSTEROL

Not long after the introduction of viosterol, tests made on experimental animals with large doses demonstrated that under certain conditions it can give rise to harm. This knowledge tended for a time to dampen the ardor with which the new vitamin D product was being applied in practical medicine. Before long, however, it was learned that the range between therapeutic and toxic doses is large, so that the danger of overdosage now seems rather remote. Only when the intake of viosterol solutions exceeds the established medicinal dose a thousand times, or by some excess of that approximate magnitude, do the symptoms of disorder clearly manifest themselves. According to a recent compilation,¹ it has been found that from 10,000 to 100,000 times the minimum protective dose caused a rapid loss of weight, loss of appetite and decrease in vigor, followed by death in white mice, rats, guinea-pigs, rabbits, cats and dogs. Death occurred at varying intervals for different animals—an average of ten days for the rabbit to thirty-six days for the guinea-pig. After death, large deposits of calcium were found in the walls of blood vessels and of the vital organs. In many animals, hardening of the arteries had taken place.

Such phenomena may be classed in the category of toxicology rather than that of clinical therapeutics. The fact that overdosage with almost any widely used drug may lead to serious harm or even prove fatal does not of itself detract from its legitimate use therapeutically. The body itself is maintained in health in some measure by the hydrochloric acid of the gastric juice; yet in considerably larger concentration the same acid may be a corrosive poison. Safety and intelligent use of such substances depends on thorough information regarding their action under varied circumstances. Medicine, therefore, should welcome every new study of viosterol, particularly in view of the increasing tendency to fortify many common foods, such as milk and bread, with vitamin D.

In recent studies by Reed and his co-workers² at the University of Illinois College of Medicine, a significant

increase in the resting, postabsorptive metabolic rate in animals has been observed following administration of large doses of viosterol. This stimulation of the metabolic rate has been difficult to explain, as it has not yet been quantitatively related to any other observed factor. During administration at a low level there is usually retention of calcium with a shift from feces to urine. On heavy or long-continued administration there is increased elimination of calcium in the urine, although a good balance may be maintained. To a lesser extent the same holds for the excretion of phosphorus. During the period of increased elimination of calcium in the urine there is usually a great increase in the volume of urine. There is no evidence of any effect on nitrogen metabolism. It is believed that one of the early effects of heavy dosage is increased consumption of body fat.

Hypercalcification has been observed by many investigators. The Chicago researches² indicate anew that the calcium content of any tissue may be significantly increased by the administration of viosterol, although wide variations may occur, certain tissues showing no increase. The magnitude of the increase in calcium content is not correlated with the dosage but seems to depend on some undetermined individual factors. The phosphorus content, while widely variable among individual animals, was affected by the administration of viosterol in a much less constant manner, if at all. According to these studies the significance of deposition of calcium in the tissues cannot be evaluated at present. Microscopic examination showed degenerated cells in some tissues, but this was not a constant finding except in the kidneys. Here one gains the impression that cellular injury occurred first, in which case the deposition of calcium probably was a direct result.

Current Comment

ACCREDITING EXAMINING BOARDS IN THE SPECIALTIES

Within a generation, specialism has revolutionized the practice of medicine. The rapid growth of the biologic sciences has contributed to this end, as well as the development of highly particularized skills in the treatment of patients. Surgery, in its various branches, obviously cannot be safely practiced by one whose opportunity for training has been limited to the cases occurring in his own general practice. When, in 1904, the American Medical Association undertook the publication of its directory, reliable criteria for the designation of specialists did not exist. The Association therefore asked each physician to mention the field in which he was especially interested and also to indicate whether he limited his practice to that field. For many years this procedure sufficed. Recently, however, there has been a growing demand in the profession for a more accurate method of determining who is a qualified specialist. To satisfy this need, the American Board

1. Sure, Barnett: *The Vitamins in Health and Disease*, Baltimore, Williams and Wilkins Company, 1933.

2. Reed, C. I.; Thacker, E. A.; Dillman, L. M., and Welch, J. W.: *The Effects of Irradiated Ergosterol on the Metabolism of Normal Dogs*, *J. Nutrition* 6: 355 (July) 1933. Reed, C. I.; Dillman, L. M.; Thacker, E. A., and Klein, R. I.: *The Calcification of Tissues by Excessive Doses of Irradiated Ergosterol*, *ibid.*, p. 371.

for Ophthalmic Examinations was organized in 1916, to test by written and oral examinations the fitness of those who aspired to be known as ophthalmologists. The certificates granted by this board have come to be regarded as satisfactory evidence of the requisite knowledge and skill in this field. In other fields similar boards have been created, and doubtless more will follow. The process of certifying specialists is still in a formative stage and many competent men have not yet availed themselves of the opportunity to obtain certification. The process is voluntary and the cost is not inconsiderable. Furthermore, there are still many branches of medicine that do not have special examining boards. At the Milwaukee session the Council on Medical Education and Hospitals was asked by the House of Delegates to express its approval of various examining boards which conformed to standards established by the Council and also to use the machinery of the Association, including its directory, in furthering the work of the accredited boards. At present the public is still in doubt as to any means of recognizing special competence in specialized medical fields. It is hoped that the Council, with the assistance of the publicity afforded by the American Medical Directory, may begin to establish order in the chaotic condition that now prevails.

PHYSICIANS, HOSPITALS AND THE NATIONAL INDUSTRIAL RECOVERY ACT

Mr. Donald R. Richberg, general counsel of the National Recovery Administration, has given an opinion concerning the status of hospitals under the National Industrial Recovery Act. While it relates primarily to hospitals, it incidentally covers all professional men and organizations and all nonprofit organizations. Mr. Richberg says:

Hospitals, not engaged in carrying on a trade or industry, do not come within the purview of the National Industrial Recovery Act, so as to come under the ordinary requirement of a code of fair competition. There is nothing to prevent any employer of labor outside of trades and industries, any professional man or organization, or any nonprofit organization, from signing the President's Reemployment Agreement and conforming to its provisions. This does not mean, however, that they are under any compulsion to do so other than that resulting from a desire to cooperate where appropriate, and so far as possible, with a general program of reemployment at shorter hours and higher wages. To the extent that labor is employed in occupations comparable with those engaged in trade or industry, it is of course desirable that similar conditions should prevail.

Outside of the trades and industries, therefore, a hospital, a professional man or organization and a nonprofit organization of any kind are under no legal duty to formulate and adopt a code of fair practice or to sign the President's reemployment agreement. With them the adoption of codes and the signing of the agreement are matters of circumstance and of patriotism. Whether a physician will or will not sign the President's reemployment agreement and display the official emblem in his office, on his automobile and elsewhere may, of course, be determined by the local medical organization in each community. Obviously, if a physician whose financial circumstances enable him

without hardship to reduce the hours of his employees and to pay the wages specified in the President's reemployment agreement signs the agreement and displays the emblem, indicating to the public that he has done so, he may work an injustice on his financially less fortunate fellow practitioners. He would, perhaps, leave the public in doubt as to whether their failure to display the emblem is due to lack of patriotism or to lack of professional or financial success. His conduct certainly would not constitute fair practice, which, after all, is one of the prime objectives of the National Industrial Recovery Act. If all physicians in a community cannot without undue hardship sign the President's reemployment agreement and conform to its exact terms as they are written, a local medical society that desires to cooperate with the President without violating the principles of fair practice may follow either of two courses: under paragraph 14 of the President's reemployment agreement it may ask for a modification that will permit compliance without hardship, or it may advise its members to enroll under the consumer's agreement and to display only the consumer's emblem.

THE GROWTH OF RESEARCH IN THE SCIENCES

The current growth of scientific literature seems destined "to tax beyond measure the ingenuity and industry of the chronicles." One commentator on the situation points out, after a study of the output from many scientific laboratories, that new journals are being born over night and that little if any abatement is yet evident in the flood of papers to the old. In the case of medicine, which banks in increasing measure on the research contributions of the so-called pure sciences, the need of coordination of the latter with the problems and the observations of the clinic is acutely appreciated. Indeed, it has been stated recently that the "water tight" compartments of the various sciences are still too water tight. The writers¹ of this statement remark that the physician who graduated twenty years ago, and perhaps even more recently, was given little biochemical training of any kind. Yet medical literature contains a large proportion of papers filled with biochemical studies of disease conditions. Comprehension of such papers is necessary if one is to keep abreast of the advances of medical science, but such comprehension involves some knowledge of biochemistry. In another column the latest volume of the *Annual Review of Biochemistry* is reviewed.² The editors point out that on vitamins alone no less than a thousand papers are reported to have been published in the past year. In the present volume almost three thousand papers in twenty-five different fields have actually received review; and it is believed that this actually represents "less than half of the papers of sufficient merit and weight to deserve treatment." An examination of the index reveals that somewhat more than three thousand five hundred biochemical investigators have been concerned during approximately a

1. Cameron, A. T., and Gilmour, C. R.: *The Biochemistry of Medicine*, Baltimore, William Wood & Co., 1933.
2. *Annual Review of Biochemistry*, edited by J. M. Luck, this issue, p. 732.

single year with the researches of major merit. The records of the lesser contributions would doubtless swell the numbers of this biologic research army to considerably greater proportions. It requires actual statistics, like these from a single "preclinical" science, to enable the physician of today to realize what the task of keeping informed really means. It explains, too, the purpose of *THE JOURNAL* in assisting in what would be, for the unaided clinician, an almost futile or herculean endeavor.

Association News

MEDICAL BROADCAST FOR THE WEEK American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., Chicago daylight saving time, which is one hour faster than central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

August 29. Living Better.
August 31. Demand Clean Food.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

September 2. Dandruff.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Child Rating Plan Announced.—The University of California Institute of Child Welfare has published a plan to be used by nursery school teachers in taking behavior inventories, the *New York Times* reports. The plan, which consists of a table of 133 traits in which the child will be rated, will be used as a means of encouraging careful observations of personality traits in preschool children and the accumulation of knowledge that may aid in guiding emotional development.

Course in Ophthalmology and Otolaryngology.—The Research Study Club of Los Angeles will present its third annual midwinter course on ophthalmology and otolaryngology, beginning January 15 and continuing two weeks. Guest lecturers will include Prof. Anton Elschnig of the German University Eye Clinic, Prague, Czechoslovakia; Dr. John F. Barnhill, professor of surgery of the head, Indiana University School of Medicine, Indianapolis, and Miami Beach, Fla.; Dr. Hans Barkan, associate clinical professor of surgery, department of ophthalmology, Stanford University School of Medicine, San Francisco; Dr. Edward C. Sewall, clinical professor of surgery, Stanford University School of Medicine, San Francisco, and Dr. Harry L. Baum, Denver. Local specialists will also offer lectures and clinics. The fee for the entire course will be \$50. Further information and a detailed program may be obtained from the secretary, Dr. Donald S. Dryer, 2007 Wilshire Boulevard, Los Angeles.

COLORADO.

State Board Election.—Dr. Gerald B. Webb, Colorado Springs, was elected president of the Colorado State Board of Medical Examiners at the quarterly meeting, July 11. Dr. Elbert B. Swerdfeger, Denver, was elected vice president and Dr. William Whitridge Williams, Denver, reelected secretary-treasurer. In April, Dr. Nolie Mumey, Denver, was appointed to the board to succeed Dr. Henry R. McGraw, Denver. Dr. Webb was appointed in December, 1932.

Society News.—Dr. Kenneth D. A. Allen, Denver, addressed the Larimer County Medical Society, Fort Collins, July 5, on intestinal obstruction.—Dr. Louis S. Faust, Denver, was guest of the Weld County Medical Society, Greeley, in June, speaking on the diagnosis and treatment of colitis.—Drs. Harry H. Wear and Thomas D. Cunningham, Denver, addressed the Northwestern Colorado Medical Society, June 29, at Hayden, on "Transurethral Resection" and "Chronic Arthritis," respectively.—Speakers before the San Luis Valley Medical Association in Alamosa, July 28, were Drs. John R. Evans, Denver, on calcium therapy in pregnancy; Frederick E. Diemer, Denver, early x-ray treatment of malignancy, and Vernon G. Jeurink, Denver, common rectal complaints.

CONNECTICUT

Clinical Congress.—The ninth clinical congress of the Connecticut State Medical Society will be held in New Haven, September 19-21. Sessions will be held at the Sterling Hall of Medicine and the New Haven Hospital, with the following speakers:

Dr. Richard M. Smith, Boston, Food Essentials for Infants and Children.
Dr. Cornelius P. Rhoads, Springfield, Clinical Deficiency Diseases.
Dr. Elliott P. Joslin, Boston, Newer Progress in the Treatment of Diabetes.
Dr. William B. Castle, Boston, Classification of Anemias: A Revision.
Dr. Paul Reznikoff, New York, White Blood Cells in Disease.
Dr. Sam Zachary Levine, New York, Water Exchange in Infants.
Albert Baird Hastings, Ph.D., Chicago, Edema.
Dr. H. Earle Conwell, Fairfield, Ala., Indications for Traction in Recent Fractures.
Dr. George E. Bennett, Baltimore, Symptomatology, Diagnosis and Treatment of Lumbosacral and Sacro-Iliac Strain.
Dr. Seward Erdman, New York, Hernia and the Workmen's Compensation Act.
Dr. Henry H. Kessler, Newark, N. J., Traumatic Neuroses in Industrial Accidents.
Mr. Howard S. Cullman, New York, Medical and Social Problems in Connection with Workmen's Compensation Insurance.

There will be demonstrations and discussions on the anemias, agranulocytosis, edema, fractures and apparatus for treatment of injuries to the back. An exhibit of special diets will be presented by the dietary department of New Haven Hospital Tuesday afternoon at the hospital and the following program of motion pictures will be given following a dinner Tuesday evening at the New Haven Lawn Club: "William Harvey and the Circulation of the Blood," "Development of the Rabbit Egg" and "Development of the Monkey Egg." A fee of \$5 covers admission to all sessions, luncheon for all three days and garage accommodations, but not the dinner meetings. Dr. Creighton Barker, 129 Whitney Avenue, New Haven, is chairman of the committee on publicity and registration.

FLORIDA

University News.—Bernard V. Christensen, Ph.D., professor and head of the department of pharmacognosy and pharmacology, University of Florida, has been appointed director of the school of pharmacy. The college of pharmacy was recently classified as a school and placed under the college of arts and sciences. Dr. Christensen is a member of the revision committee of the U. S. Pharmacopeia and the committee on pharmaceutical botany and pharmacognosy of the National Research Council and is chairman of the committee on standardization of botanical drugs of the American Conference on Pharmaceutical Research.

GEORGIA

Personal.—Dr. Oliver L. Von Canon has resigned as health commissioner of Brooks County because of recent injuries sustained in an automobile accident.—Dr. James A. Thrash, Jr., Columbus, has been appointed health officer of Muscogee County.—Dr. John P. Kennedy, health officer of Atlanta, was recently reappointed for his sixteenth term. He has served fourteen two-year terms and one four-year term.—Dr. Fred H. Simonton, Chickamauga, for two years health commissioner of Walker County, has resigned.

INDIANA

New Secretary of Medical Board.—Dr. Franklin S. Crockett, Lafayette, has been appointed secretary of the Indiana State Board of Medical Examiners, succeeding Dr. William A. Davidson, resigned. Dr. Davidson, president of the board in 1921, became secretary in 1929.

Society News.—Dr. Pierce MacKenzie, Evansville, addressed the Gibson County Medical Society, Princeton, July 10, on "Preventive Measures and Management of Eclampsia."—Drs. Joseph H. Weinstein, Terre Haute, president, Indiana State Medical Association, and Mr. Thomas A. Hendricks, Indian-

apolis, executive secretary, among others, addressed the Tippecanoe County Medical Society, July 13, on medical organization and the new plan of the state committee for child and maternal welfare.—Dr. Willis D. Gatch, Indianapolis, addressed the Carroll County Medical Society, July 14, on abdominal obstruction.—Dr. John M. Whitehead, Indianapolis, discussed anesthesia at a meeting of the Hendricks County Medical Society, Danville, July 21.

MARYLAND

Increase in Venereal Disease.—The number of cases of venereal disease reported in Baltimore has been so great in the past two years that the cases referred to municipal clinics have become a problem, according to *Baltimore Health News*. Clinic service has almost doubled in volume. The situation within recent months became acute and Dr. Allen W. Freeman, professor of public health administration, Johns Hopkins University School of Hygiene and Public Health, was asked to make a study of the municipal venereal disease service. His report revealed that the clinics are badly housed and poorly equipped and the number of patients attending them too great to be handled properly. He recommended, among other things, that, in view of the present impossibility of obtaining increased facilities, the load on the present staff should be diminished by discontinuing treatment to patients who have already received four courses of arsphenamine. He felt that if a free supply of arsphenamine should be made available, hospital clinics would assume treatment of these patients. The report stresses the importance of treating patients in the infectious stage.

MASSACHUSETTS

Dr. Bigelow Appointed Superintendent of Massachusetts General Hospital.—Dr. George H. Bigelow, commissioner of health of Massachusetts since 1925, has resigned to become superintendent of the Massachusetts General Hospital, Boston, effective October 1, succeeding Dr. Frederic A. Washburn, superintendent of the institution since 1922, who will reach the retirement age within a few months. A graduate of Harvard University Medical School, Dr. Bigelow was deputy state commissioner of health and director of the division of communicable diseases before he became commissioner. Dr. Washburn, also a graduate of Harvard, first became associated with the Massachusetts General Hospital in 1899 as assistant resident physician. He has also been superintendent since 1922 of the Massachusetts Charitable Eye and Ear Infirmary. He was president of the American Hospital Association in 1912 and has been a member of the Council on Medical Education and Hospitals, American Medical Association, since May, 1932.

MICHIGAN

Dr. Chadwick Appointed Massachusetts State Health Commissioner.—Dr. Henry D. Chadwick, tuberculosis controller of the Detroit Health Department since 1929, has been designated commissioner of health of Massachusetts to succeed Dr. George H. Bigelow, resigned. A graduate of Harvard University Medical School, Dr. Chadwick began practice in Waltham, Mass. He served as superintendent of the Vermont Sanatorium for Tuberculosis, Pittsford, from 1907 to 1909, and held a similar post with the Westfield (Mass.) State Sanatorium for tuberculous children from 1909 to 1929, when he went to the Detroit Health Department. In 1927 he was acting director of the division of tuberculosis of the Massachusetts State Department of Public Health. He originated the so-called "ten year program," known as the Chadwick Clinics in Massachusetts for the examination of school children.

MISSISSIPPI

Improving the Sanitation of Dairies.—A program of dairy improvement in south Mississippi was recently launched in conjunction with one Mississippi and two Louisiana milk plants which obtain a part or all of their milk from Mississippi dairies. Improved sanitation at these dairies was necessary in order that the milk shipped into Louisiana might meet the requirements of the Louisiana State Board of Health. The owners of the plants cooperated by agreeing to pay the cost of an inspector who would be responsible to the Mississippi board. The work is being carried on according to the requirements of the standard milk ordinance sponsored by the U. S. Public Health Service.

Society News.—Dr. John C. Culley, Oxford, among others, addressed the Central Medical Society, Jackson, July 5, on "Symptomatic Agranulocytic Angina Following Neosarsphenamine Therapy."—Dr. Hillrie K. Rouse, Jr., Lyman, presented a paper on diarrhea in children before the Harrison-

Stone-Hancock Counties Medical Society, Gulfport, July 5.—Speakers at a meeting of the Homochitto Valley Medical Society, Centerville, July 13, were Drs. Alton Ochsner, New Orleans, on "Complications of Appendicitis"; Leon S. Lippincott, Vicksburg, "Cancer of the Cervix Uteri," and John W. Barksdale, Jackson, "Immediate Operation in Acute Infection of the Fallopian Tubes."—The Issaquena-Sharkey-Warren Counties Medical Society was addressed in Vicksburg, July 11, by Drs. Phillip C. Schreier, Memphis, on "Diagnosis and Treatment of the Diseased Cervix"; Sydney W. Johnston, "Endocervicitis," and John A. K. Birchett, Jr., "Conservative Treatment of Compound Fractures of the Long Bones."

MISSOURI

Commemoration of Founding of St. Louis Hospital.—A bronze tablet was unveiled, June 14, on the site of the first hospital west of the Mississippi River, 76 Spruce Street, St. Louis, during the eighteenth annual convention of the Catholic Hospital Association of the United States and Canada. It commemorates the founding of the St. Louis Hospital, Nov. 6, 1828. The Mullanphy Hospital grew out of this early institution and was followed by the De Paul Hospital, which now occupies the site under the direction of the Daughters of Charity of St. Vincent De Paul.

Outbreak of Encephalitis.—Twelve fatalities have occurred in an outbreak of encephalitis of the epidemic type in St. Louis County, according to the *Chicago Tribune*, August 21. The disease first made its appearance in the suburbs of the county, July 23. In only one instance have two patients been reported in a family. City and county health officers are endeavoring to prevent the spread of the disease, and state and federal health authorities are cooperating. One report stated that thirty-seven patients were under treatment at the Isolation Hospital, St. Louis. About 100 patients have been hospitalized thus far in the outbreak. Dr. James P. Leake and Dr. Charles Armstrong of the U. S. Public Health Service are in St. Louis to cooperate in controlling the disease.

Society News.—Dr. Levi H. Fuson, St. Joseph, addressed the Buchanan County Medical Society, June 21, on "Neutropenic States, Including Report of Nine Cases of Agranulocytic Angina."—Dr. William Beckman, Strasburg, addressed the Cass County Medical Society, June 8, at Harrisonville, on empyema and Dr. Harry S. Crawford, Kansas City, recalled the history of the society, of which he was secretary for twelve years.—Drs. Ernest L. Cartwright and Guy D. Callaway, Springfield, addressed the Dallas-Hickory-Polk Counties Medical Society, Buffalo, June 6, on "Prenatal Care, Delivery and Postnatal Care of Normal Obstetrical Cases" and "Coronary Occlusion," respectively.—Drs. Daniel L. Yancey, Jr., and C. H. Max Fitch, Springfield, addressed the Greene County Medical Society, June 9, on "Treatment of Compressed and Impacted Fractures of Vertebrae" and "Nonspecific Protein Therapy," respectively.—Drs. Guy D. Callaway and Forrest A. Harrison, Springfield, addressed the Wright-Douglas Counties Medical Society, Mountain Grove, June 15, on "Sclerosis, Embolism and Thrombosis of the Coronary Arteries" and "Treatment of Summer Diarrheas," respectively.—Dr. E. Gorter, professor of pediatrics, University of Leyden, Holland, addressed a joint meeting of the St. Louis Pediatric and St. Louis Medical societies, recently, on "Copper and Anemia."

NEW JERSEY

Health at Trenton.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended August 12, indicated that the highest mortality rate (15.5) appeared for Trenton and the rate for the group of cities, 9.2. The mortality rate for Trenton for the corresponding week of last year was 13.5 and the rate for the group of cities, 9.4. The annual rate for eighty-five cities was 11.2 for the thirty-two weeks of 1933, as against a rate of 11.5 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

NEW YORK

Course for Health Officers.—Albany Medical College in cooperation with the state department of health will offer an extension course to qualify physicians for appointment as health officers of towns under 50,000 population. The course, which will begin September 1, will consist of reading and study assignments with written tests on the completion of each. Once each month physicians will meet with the health officer of the

district in which they live for a full day of discussion and practical demonstrations. In June there will be a "residence week," during which all candidates will be assembled for a conference on public health problems. A fee of \$30 will be charged.

Outbreaks of Septic Sore Throat.—An epidemic of more than 150 cases of septic sore throat in the villages of Luzerne and Hadley was reported in a recent issue of *Health News*, official bulletin of the New York State Health Department. It was found that 137 cases occurred between March 13 and June 14, and 19 cases were reported in a recurrence several weeks later. Investigation revealed that 55 per cent of the milk sold in the two villages was furnished by a single dairy and that it was not pasteurized. On one farm supplying this dairy, a cow had mastitis, from which hemolytic streptococci were isolated. There was no evidence of a case of septic sore throat in any person connected with the dairy. Instructions were given to isolate this cow, but it is believed that the infected milk was again mixed with the general supply and caused the recurrence in July. A similar outbreak involving about 200 cases is said to have occurred in and near Albion in May and June, apparently due in the main to contact infection, as no common source could be identified. Seventeen cases occurred among a group of thirty-two persons who attended a dinner in Wayland, June 28. This outbreak was attributed to unpasteurized cream purchased from a small dealer.

New York City

Medal Awarded to Dr. Dakin.—The second Conné medal has been presented by the Chemists' Club of New York to Henry D. Dakin, Sc.D., editor of the *Journal of Biological Chemistry*, in recognition of his work on antiseptic solutions. The presentation was made by Dr. Lewis H. Marks, president of the Chemists' Club, at a private dinner at Dr. Dakin's home, July 12. The Conné medal is administered by the Chemists' Club on behalf of Mrs. Madelyn Conné of New York and New Orleans, who established the award in memory of her husband, Philip A. Conné, for discoveries in chemistry. The first award was made to Dr. John J. Abel, retired professor of pharmacology, Johns Hopkins University School of Medicine, Baltimore, last year. The jury of award consisted of Daniel D. Jackson, professor of chemical engineering, Columbia University, chairman; Marston T. Bogert, Sc.D., professor of organic chemistry, Columbia; Dr. Walter W. Palmer, Bard professor of medicine, Columbia University College of Physicians and Surgeons; Dr. Leonard G. Rowntree, director, Philadelphia Institute for Medical Research, and Dr. Marks.

Group Payment Plans Not Authorized by Present Insurance Laws.—A group payment plan for hospital care recently proposed by several hospital organizations in New York constitutes insurance and cannot be established under the present insurance laws, State Superintendent George Van Schaick has ruled. In view of this opinion, advocates of the plan will carry on further study and seek appropriate legislation at the next session of the legislature, according to an announcement from the United Hospital Fund. The proposed group payment plan was worked out by a committee representing the Hospital Conference of the City of New York, hospital superintendents and the United Hospital Fund. It provides for the formation of a nonprofit membership corporation to be known as the Associated Hospital Service of New York, which would be controlled by ten directors. These directors would be chosen by the presidents of the Hospital Conference of the City of New York, the Brooklyn Hospital Council, the five county medical societies of Greater New York and the Medical Society of the State of New York and the trustees of the United Hospital Fund. The corporation would solicit members among employed groups at a rate of 90 cents a month or \$10.80 a year, to be deducted from their pay, which would entitle them to three weeks of "semiprivate" hospital care during the contract year after a waiting period of ten days (except in case of accidents) and a ten months waiting period in obstetric cases. Admission to the hospital would be granted only on the recommendation of the member's personal physician, and the patient would make his own arrangement for his fees for medical service. The corporation would reimburse the hospitals at a flat rate, which the committee hoped would eventually be \$7 a day. Members of the committee studying the plan are Dr. Sigismund S. Goldwater, chairman; Dr. Thomas Dwight Sloan, former president of the Hospital Conference; Louis I. Dublin, Ph.D., third vice president, Metropolitan Life Insurance Company; Dr. Alexander Lambert; Karl Eilers, president, Lenox Hill Hospital; Rev. Joseph Brophy, representing the Brooklyn Hospital Council; George A. Wilson, attorney for the United Hospital Fund; Henry C. Wright, hospital consultant, and Homer Wickenden, director of the United Hospital Fund.

NORTH CAROLINA

University News.—Dr. Walter Reece Berryhill, Cleveland, has been appointed physician to the University of North Carolina, Chapel Hill, to succeed the late Dr. Eric Alonzo Abernethy. Dr. Berryhill is at present instructor in medicine at Western Reserve University School of Medicine.

Personal.—Dr. Mary Janet Alexander, formerly of Huntsville, now head of the Nancy Fulwood Hospital, Montgomery, in the Punjab district of India, has been awarded the Kaiser i Hind Medal by the king of England, according to newspaper accounts. The award was a recognition of her work among women and children of India. Dr. Alexander went to India as a missionary.

PENNSYLVANIA

Personal.—The Squibb Fellowship at Mellon Institute, Pittsburgh, has been awarded to Harold William Coles, Ph.D., for the year July 1, 1933, to July 1, 1934, for research in pharmacology and physiology as related to local anesthetics.—Dr. Nathan F. Mossell, founder and medical director of Frederick Douglass Hospital, Philadelphia, has resigned after thirty-eight years' service.—Physicians and civic leaders of Reading recently tendered a testimonial dinner to Dr. John W. Kauffman, who retired after thirty-five years as chief of obstetrics at Reading Hospital.

SOUTH CAROLINA

Society News.—Dr. Virgil P. W. Sydenstricker, Augusta, Ga., addressed the Spartanburg County Medical Society and the staff of the Spartanburg General Hospital, June 25, on agranulocytosis.—Dr. John L. Sanders, Greenville, addressed the Greenville County Medical Society, July 3, on differential diagnosis of mastoiditis.—Physicians of Bamberg, Orangeburg and Calhoun counties at a meeting in Orangeburg, June 21, heard Bruce Mayne of the U. S. Public Health Service speak on malaria.—The fourth annual tuberculosis clinic of the South Carolina Sanatorium and the South Carolina Tuberculosis Association was held at State Park in May. Drs. Samuel M. Bittinger, Sanatorium, N. C., and George H. Bunch, Columbia, presented papers on early diagnosis and surgical procedures, respectively. Similar clinics were sponsored by the association at Spartanburg, Florence and Pinhaven.

UTAH

State Medical Meeting at Salt Lake City.—The thirty-ninth annual session of the Utah State Medical Association will be held in Salt Lake City, September 14-16, with headquarters at the Newhouse Hotel. The first day will be devoted to the Harlow Brooks Fund Post-Graduate Course at the Salt Lake General Hospital, for which the following program of addresses is announced:

Dr. Willis S. Lemon, Rochester, Minn., Pneumonia; Tuberculous Pleurisy with Effusion.
Dr. Alson R. Kilgore, San Francisco, The California Cancer Commission's Diagnosis and Treatment Survey.
Dr. Claude F. Dixon, Rochester, Minn., Carcinoma of the Rectum and Rectosigmoid.
Dr. Alfred W. Adson, Rochester, Minn., Raynaud's Disease and and Thrombo-Angiitis Obliterans.

Clinics will be conducted during the day by Drs. Clifford D. Sweet, Oakland, Calif., on pediatrics; Thomas E. Carmody, Denver, on eye, ear, nose and throat conditions; and Harlow Brooks, New York, on heart disease. Scientific meetings of the association will offer the following speakers:

Dr. Dean Lewis, Baltimore, President, American Medical Association, subject not announced.
Dr. Eugene S. Kilgore, San Francisco, Abdominal Manifestations of Circulatory Disease; Newer Concepts of Coronary Disease.
Dr. Alson R. Kilgore, Differential Diagnosis of Surgical and Non-surgical Abdominal Conditions.
Dr. Carmody, Pathologic Lesions of the Mouth of Special Interest to Physicians.
Dr. Adson, Trigeminal Neuralgia—Diagnosis and Treatment; Spinal Cord Tumors—Diagnosis and Treatment.
Dr. Ralph C. Matson, Portland, Ore., Operative Collapse Therapy of the Lung; Treatment of Chronic Empyema.
Dr. Joseph E. Tyce, Salt Lake City, Gas Bacillus Infection.
Dr. Sweet, The Child as a Patient.
Dr. Hiram Winnett Orr, Omaha, Acute and Chronic Osteomyelitis; Compound Fractures of the Femur.
Dr. J. Roscoe Miller, Chicago, Recognition and Treatment of Cardiac Arrhythmias.
Dr. Lemon, Tumors of the Mediastinum.
Dr. Brooks, Coronary Thrombosis.
Dr. George W. Pierce, San Francisco, Practical Application of Reconstruction Surgery.

Dr. Frank M. McHugh, Salt Lake City, president of the association, will make his official address at the opening scientific meeting, Friday morning. The president's reception will be held at the Newhouse, Thursday evening, September 14.

VERMONT

Society News.—Dr. Philip J. Howard, Detroit, addressed the Rutland County Clinical Club, July 19, at a special meeting at Dr. George G. Marshall's camp near Mendon. Dr. Howard discussed treatment of infections in children.

WEST VIRGINIA

Society News.—Speakers at a meeting of the Central West Virginia Medical Society at Webster Springs, July 19, were Drs. Howard T. Phillips, Wheeling, on "Diagnosis and Treatment of Common Skin Diseases"; John E. Cannaday, Charleston, "Gallbladder Surgery," and Archer A. Wilson, Charleston, "Head Injuries."—Drs. Wesley C. Thomas and Joseph A. Guthrie, Huntington, addressed the Logan County Medical Society, Logan, July 19, on "Relation of Upper to Lower Respiratory Infections with Special Reference to Sinuses" and "Indigestion," respectively.—Dr. Harry G. Steele, Bluefield, addressed the Fayette County Medical Society, Oak Hill, July 11, on practical points in obstetrics.

WISCONSIN

Portrait of Dr. Harper.—Friends of Dr. Cornelius A. Harper, Madison, now in his thirtieth year as state health officer, have presented a portrait of him to the state board of health. The presentation was made, July 1, at the state capitol by Dr. William D. Stovall, director of the state laboratory of hygiene. Dr. Gustave Windesheim, Kenosha, president of the board, made the address of acceptance and Dr. Harper also spoke briefly. Dr. Harper is believed to be the senior public health official in the United States in point of unbroken full time service. In 1930 he was awarded the gold seal of the State Medical Society of Wisconsin for outstanding service in the fields of medicine and public health and also in that year he became president of the society.

Dr. Carey Appointed Dean at Marquette.—Dr. Eben J. Carey, professor and director of the department of anatomy, Marquette University School of Medicine, Milwaukee, has been appointed dean to succeed Dr. Bernard F. McGrath, who resigned recently because of ill health. Dr. Carey was for several years a member of the faculty of Creighton University School of Medicine, Omaha, where he received the degree of doctor of science in 1920. In 1920 he was appointed to the teaching position at Marquette and was in addition dean of medical students from 1920 to 1928. During this period Dr. Carey also took his medical degree at Rush Medical College, Chicago, graduating in 1925. In 1930 he was given partial leave of absence to assemble the medical exhibits at the Century of Progress Exposition in Chicago.

GENERAL

Society News.—Dr. Sterling B. Taylor, Columbus, Ohio, was elected president of the American Association of Railway Surgeons at its annual meeting in Chicago, August 10-12. Drs. George W. Cale, Jr., Texarkana, Ark., Michael J. Owens, Kansas City, Mo., and Allan B. Stewart, Owatonna, Minn., were elected vice presidents and Louis J. Mitchell, Chicago, reelected secretary.

Hotel Physicians' Advisory Board.—Announcement is made of the appointment of an advisory board to the Hotel Physicians of America, recently organized for the purpose of raising the standards of medical practice in hotels. The board includes the following physicians:

Daniel F. Mahoney, Boston	Sherman Williams, Denver
Joseph D. Nagel, New York	George F. Rendleman, St. Louis
Henry C. Prill, Cleveland	Stephen Cahana, Milwaukee
Charles H. Peppers, Los Angeles	Eugene E. Scott, St. Paul
Frank A. Hornaday, Washington, D. C.	Howard E. Babcock, New York
Harry F. Dibble, Detroit	Edward F. Addenbrooke, Chicago

Hotel physicians are invited to communicate with the secretary, Dr. Joseph R. Blake, Congress Hotel, Chicago.

Illness in Industrial Employees.—Sickness rates among industrial employees have remained almost stable for the past three years at a lower level than for the preceding three-year period 1927-1929, statisticians of the U. S. Public Health Service have found in studying a sample group representing about forty industrial establishments. The rate for respiratory disease was higher in 1932 than in 1931, because of an unusual amount of influenza last year, but, excluding influenza, other sickness rates for 1932 were the lowest since these records were begun in 1921. In spite of the higher rate for influenza, there was no increase in pneumonia. Other diseases that showed low rates in this group of the industrial population were digestive diseases in general, diseases of the skin and the group of infectious and parasitic diseases. On the other hand, the 1932

record showed slight increases in diseases of the circulatory system, especially the heart, nonindustrial injuries and certain "general diseases." Cancer remained the same as in 1931, but the rate was higher than for the 1927-1929 period.

Smallpox in the United States and Canada.—A decline in the amount of smallpox in the last three years in the United States and Canada is indicated in figures recently announced by the Metropolitan Life Insurance Company, covering forty-four states, the District of Columbia and eight Canadian provinces. Since 1930 there has been a total decline of 72 per cent in the incidence of this disease, while in 1932 alone there was a decrease of 56 per cent. More than 90 per cent of the 12,784 cases reported in the United States in 1932 occurred in less than half of the forty-four states for which figures are available. South Dakota alone reported almost 1,800 cases, and Vermont, which is the fourth smallest state in the Union in population, reported 254 cases. This is unique, it was pointed out, as Vermont is surrounded by a territory that has been singularly free from the disease for at least a decade. This territory, consisting of the rest of New England, New York and the Province of Quebec, with nearly 24 million inhabitants, reported only 345 cases during 1932. An average case fatality rate of about 3 per thousand cases was noted throughout the United States and Canada. In an outbreak of fifty-six cases in Vancouver, thirty-nine patients had never been vaccinated successfully prior to infection. The remaining victims had been vaccinated from fifteen to fifty-five years previously. No one contracted the disease who had been vaccinated within fifteen years. The epidemic was controlled by wholesale vaccination.

CORRECTION

"The Doctor."—The color reproduction of the painting "The Doctor," which appeared as a two-page color insert advertisement of Petrolagar in THE JOURNAL, July 22, carried the caption "By Sir Luke Fildes, R. A." The caption should have read "The Doctor," "After the Canvas by Sir Luke Fildes, R. A.,—Joseph Tomanek."

Government Services

Vacancies in Government Medical Service

The U. S. Civil Service Commission announces that applications will be received for the positions of medical officer, associate medical officer and assistant medical officer, which must be on file with the commission not later than September 28. In addition to a general register of eligibles, a separate register will be established for the following specialties: cardiology; child hygiene; eye, ear, nose and throat; genitourinary (urology); internal medicine and diagnosis; neuropsychiatry; pathology and bacteriology; roentgenology; surgery (general or orthopedic); tuberculosis, and venereal disease. Entrance salaries for these positions will range from \$2,600 to \$3,800 a year, less a deduction not to exceed 15 per cent as a measure of economy, and a retirement deduction of 3.5 per cent. When quarters, subsistence and laundry are furnished, a further deduction is made from the salary. Applicants will not be required to report for a written examination but will be rated on education and experience. Full information may be obtained from the Civil Service Board of Examiners at the postoffice or customhouse in any city or from the commission, Washington, D. C.

Army Internships Canceled

Appointees to internships in army hospitals have been notified by the surgeon general that these positions have been abolished as a part of the federal economy program.

Two Biologists Retire

Two biologists who have served many years with the Bureau of Biological Survey of the U. S. Department of Agriculture, Mr. Vernon Bailey and Dr. Theodore S. Palmer, retired, July 1. Mr. Bailey has been a member of the bureau's staff for forty-six years and chief field naturalist since 1890. He is widely known for his studies on the geographic distribution of mammals, birds and plants. Dr. Palmer, a graduate of Georgetown University School of Medicine, has been with the bureau since 1889. At various times he has been assistant chief and acting chief of the Biological Survey, has been in charge of the division of game preservation, and since 1900 has been in charge of the regulation of the importation of foreign birds and mammals.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 5, 1933.

The British Graduate Medical School

The foundation stone of the British Post-Graduate Medical School has been laid by Mr. Neville Chamberlain, chancellor of the exchequer. The need for such a school, with a hospital, in which the now scattered graduate teaching of London could be brought together in one institution, has long been felt. But the difficulties have been so great that twelve years has elapsed since a minister of health appointed a committee to study the question. The difficulties were increased by the financial depression. The chancellor sketched the evolution of graduate teaching in London since the early nineties, when Sir Jonathan Hutchinson held afternoon demonstrations at his clinical museum, where his enormous collection of water-color drawings of disease, most of them the work of his own artists, was displayed and used for comparison with living examples. Out of that sprang the Medical Graduates College, which did valuable work in arranging lectures and demonstrations by the leading teachers of the day but had the serious defect that no hospital was attached to it. The next stage was the foundation of the Fellowship of Medicine and Post-Graduate Association, in which Osler played the leading part. The association still exists and is doing valuable work in organizing graduate lectures and teaching at the various hospitals of London. But there is the serious defect that there is no central institution for graduate work, such as exists in Berlin and Vienna. This is now remedied by the new school. The chancellor claimed that it would enable London to become the center of the most progressive medical teaching in the world. Visitors from the dominions and even from America and other parts of the world had deplored to him the necessity of being forced to go to the European continent and listen to lectures in a language which they understood only imperfectly and to get instruction they would have preferred to obtain in London.

Recommendations for Reform of Medical Services of Defense Forces

It has been shown in previous letters that the recruiting of physicians for the defense services was unsatisfactory, as the inducements compared unfavorably with those of private practice. A committee containing the heads of the three medical services (navy, army and air force) and two representatives of the civil profession (Prof. G. E. Gask, director of the surgical unit, St. Bartholomew's Hospital, and Dr. A. M. H. Gray, dean of University College Hospital Medical School) was appointed to report on the matter. Their principal conclusions are as follows: The reasons that deter medical students from entering the medical services are twofold: The career is believed to lack professional opportunity and it is not considered to offer sufficient economic attraction. The services should be reorganized on the basis of a reduced total establishment of officers by the elimination of posts that provide insufficient professional work. Professional opportunity should be further improved by all officers who make the services their life career being allowed to specialize, if qualified to do so; by specialists being enabled to spend a considerable part of their career in practicing their speciality, and by the opportunity to rise to the higher ranks without abandoning professional for administrative work.

On the economic side, reorganization would give earlier promotion, a larger proportion of officers reaching the higher ranks, a larger average pension and a longer career. Thus in the army the rank of lieutenant colonel would normally be reached at about the age of 42, instead of about 48 at present,

and colonel at about 50 instead of at 53. Moreover, a large majority of officers would in future be able to reach the rank of colonel and thus to retire with a larger pension. The ages of compulsory retirement would be the same in all three services: no officer would be retired before 55, a large majority would serve to 57, and a minority would serve to 60.

SCALES OF PAY

Except for certain limited adjustments, the committee recommends no alterations in the pay scales, which it considers satisfactory provided the length of the career and the prospects of promotion are improved. In the case of the army the increase of emoluments resulting from the proposals amounts to an average of nearly \$750 throughout the period of an officer's career between the ages of 35 and 50, when his family responsibilities are greatest. In the earlier and later years the improvement is \$250. More officers should not be entered than is justified by the number of posts of higher responsibility available for them to fill later. The present higher establishment is unduly restricted and there should be a substantial increase in the number of officers of the ranks of surgeon commander and surgeon captain, lieutenant colonel and colonel, wing commander and group captain.

SHORT SERVICE APPOINTMENTS

Since the obligation to provide a career of adequate length and with adequate prospects of promotion appears to the committee to be an overriding one, it follows that some officers must be carried who will not be given a life career. The best way is to enter all officers in the first instance for short service. From these will be chosen each year the numbers to be retained for life service with prospects of promotion. Short service officers who do not desire permanent retention or are not chosen for it would be transferred to the reserves and given a gratuity large enough to assist them in buying a practice. The short service period would be five years, on completion of which a gratuity of \$5,000 would be paid. But in the navy and air force officers would be entered in the first instance for only three years, and if they retired then the gratuity would be \$2,000. This reorganization would place the services on a favorable competing basis with civil employment and attract recruits of excellent quality from the medical schools.

OVERSEAS POSTS

In the reorganized services a large proportion of the overseas and navy posts would be filled by junior officers, to whom this would be an attraction. On the other hand, the amount of this service falling on an officer of more than six years' service would be reduced. The reserve provided by officers who are not retained for life careers would more than make good the reduction recommended in the regular establishment and the position of the services on mobilization would be strengthened.

The committee also recommends the creation of a small number of scholarships open to the sons of members of the forces who wish to enter the medical services.

National Health Insurance and Unemployment

The prolonged unemployment of a large portion of the population is threatening a serious effect on national health insurance. It is calculated that at the end of the year more than 100,000 will be thrown out of insurance because of failure to pay contributions, in consequence of unemployment. The result is that they will no longer be entitled to medical attendance from the panel physicians but must resort to the public assistance medical officer. The subject was discussed at the representative meeting of the British Medical Association. One speaker suggested that public assistance committees should be asked to provide the medical attendance to which these persons had previously been entitled. But Sir Henry Brackenbury (chairman of the council) pointed out that this was impossible, as they would then constitute a favored class of public assistance patients.

The Insurance Acts Committee of the association wanted them to be attended, if possible, by their insurance physicians, already chosen. This could be achieved in only one way, which depended on the good will of the public assistance authorities. If, instead of the present system of a medical service of a limited number of physicians permanently appointed for the purpose, "the open choice method" should be adopted, the relations between patients and physicians need not be disturbed. The open choice method has already been advocated by the association for general adoption, without regard to the present emergency. It means that poor persons for whom gratuitous medical attendance is provided can select their own physicians, as under the panel system, so that every physician can be a public assistance medical officer. The obstacle to this would be financial. If the work of the public assistance physicians is greatly increased by the numbers dropping out of insurance, no doubt the public assistance authorities will be faced with demands for increased salaries. The question whether it would be more economical—and unfortunately economy is a pressing problem just now—to pay increased salaries or to pay capitation fees to physicians generally was not considered.

PARIS

(From Our Regular Correspondent)

July 12, 1933.

Combined Antidiphtheritic and Antityphoid Vaccination

Vaccination against diphtheria still remains a subject much discussed. The gravity of the disease has increased in France and in other countries, and experience shows that much heavier doses of serum must now be used against it than were used formerly, or a much more potent serum. The same is true of the vaccinations used in its prevention. Ramon's anatoxin has been continually improved by him, so that he has been able to reduce the number of inoculations from four to two, employing, at the same time, much weaker doses, which scarcely ever cause serum reactions. Furthermore, serum reactions can be completely eliminated by the previous injection of a mixture of sodium benzoate and sodium salicylate, as recommended by Vincent. The researches of Crouzon, Loiseau and Laffaille, at the Ecole des infirmières at the Hôpital de la Salpêtrière, have made known a method of reinforcing the preventive action of antidiphtheritic serum, which is remarkably effective though peculiar in its nature. It consists in combining, on the advice of Dopter, antidiphtheritic and antityphoid vaccinations. Thus not only is the subject vaccinated against two diseases but his acquired immunity toward diphtheria is reinforced in a striking manner. According to Crouzon, the Schick test in various hospitals in persons more than 19 years of age is positive in from 32 to 64 per cent of the cases. Only vaccination by the subcutaneous route gives perfect protection against diphtheria, but it is necessary to control by the Schick test the results secured. If one has a group to vaccinate, Crouzon recommends making use of the combined vaccination of Dopter (anatoxin plus antityphoid vaccine), all subjects being eliminated who do not present a Schick-positive test. The subjects presenting a negative Schick test should be vaccinated only against typhoid. One should inject, at intervals of fifteen days, 1.55 cc., 3 cc. and 3.5 cc. of a mixture of two parts anatoxin and one part heated antityphoid vaccine. It is indispensable to give three injections of antityphoid vaccine, the former technic of a single injection of 1.5 cc. having been found inadequate. At the end of six weeks, a Schick control test should be made, and the few subjects who have remained receptive should be given a fourth injection of anatoxin, the result of which also should be controlled. During the discussion at the session of the Academy of Medicine at which this communication was presented, Mr. Dopter emphasized that the immunizing potency

of mixed vaccine (anatoxin plus antityphoid vaccine) is no longer discussable. From May, 1930, to November, 1932, 15,000 men in the army were vaccinated, and only twenty cases of diphtheria developed among them (1.32 per thousand). During the same period, 42,000 soldiers in the same units were not vaccinated. In this group 443 cases of diphtheria were diagnosed, or 10.54 per thousand. The high percentage of receptive recruits causes an outbreak of endemic diphtheria in the regiments, in connection with the calling in of every levy. These outbreaks will not be reduced until vaccination becomes more widespread among the civil population.

The Relation of Lymphogranulomatosis and Tabes

Some are beginning to suspect the existence of a peculiar relation between tabes and the Nicolas-Favre disease (lymphogranulomatosis). The syphilitic origin of tabes is no longer questionable. But it appears that the lymphogranulomatous virus is capable of producing in the cord many tabetic or pseudotabetic symptoms. Ionesco-Mihaesti, Tupa, Wisner and Badenski have only secured the experimental production of an acute pseudotabetic syndrome in the monkey, by inoculation of the filtered virus of an inguinal lymphogranuloma. Since then they have observed similar cases by using the same virus applied under similar conditions and by the same route (brain and peritoneum, simultaneously). In a second article, presented by Dr. Roux, the authors reported the results of new experiments and conclude that the clinical phenomena and the histopathologic lesions invoked in the monkey by the experimental inoculation of the virus of inguinal lymphogranuloma into the peritoneum resemble in a striking manner those observed in human tabes. After a first phase characterized by motor disorders with evident paralysis of the lower limbs, a period of apparent remission varying in length sets in, during which the animal becomes more and more cachectic. At the necropsy, the histologic examination of sections prepared of the sciatic nerve revealed always the presence of inflammatory lesions. In sections derived from various cervical, dorsal and lumbar regions of the cord, one could observe a degeneration at the level of the posterior funiculus, in the region of the tracts of Burdach and Goll, presenting the typical histopathologic aspect of tabes dorsalis. These observations justify the assumption of a probable etiologic rôle assumed by the lymphogranulomatous virus in many cases of human tabes, especially since the authors have secured a positive Frei test in several cases of tabes in man. This would explain the origin of certain cases of tabes that arise without any evidence of syphilitic infection either in the personal history or from the Wassermann test, and in which the inguinal lymphogranulomatosis had passed unnoticed or had been regarded as of no importance at a time when the disease itself was not yet manifest.

Aid for Aged Physicians

In 1833, Orfila, the eminent toxicologist of Spanish extraction, who had become professor of legal medicine at the Faculté de médecine de Paris and dean of that faculty, founded the first mutual aid society among the physicians, membership being limited at first to the physicians of Paris and the department of the Seine. Later, the general association of the physicians of France was founded, but the parent society has continued to retain its independence. Orfila was supported in this endeavor by many famous physicians of that period: Paul Dubois, Desgenettes, Hippolyte Cloquet, whose names must not be forgotten, for they supplied the society with its first capital, from their own funds. The purpose of the society was to aid aged practitioners, who, after devoting themselves to the profession throughout their life, had been unable to lay aside a sufficient sum to assure a peaceful old age. Since that time the treasury of the society, as in all mutual aid societies, has been replenished by the regular contributions of its members.

But aid is given only to those physicians who actually need it, which, fortunately, is only a small percentage of the whole number. The constitution of the society authorizes today the granting of aid even to physicians who are not members and who have not made any contributions but who have been overtaken by infirmity or want. The society celebrated its centenary in ceremonies presided over by its president, Dr. Bazy, member of the Academy of Sciences and of the Academy of Medicine. The society began, a hundred years ago, with a capital of 7,000 francs (\$1,370). Today it has a capital of 4,113,730 francs (\$220,495, current value), supplied by contributions, which have steadily risen from 12 francs to 50 francs (\$2.65), and also by legacies of wealthy physicians charitably inclined. At present the sums required for aid amount annually to 130,000 francs (\$6,968, current). This fund makes possible the granting of an old age pension of 3,400 francs (\$182) to certain aged confrères, and the temporary allocation of 3,200 francs (\$171) to other physicians who are ill. Finally, widows of physicians, if in need, receive 1,700 francs (\$91). Aid is granted to physicians not enrolled in the society, and a bed has been established at the Sanatorium des étudiants. The income from certain legacies is set apart for a large group of families; the rents from another legacy furnish a scholarship for a young man designated by a certain lycée in Paris. The only shadow across the picture traced by Professor Rathery is that the society has so small a membership (816), whereas there are more than 6,000 physicians practicing in the department of the Seine.

BERLIN

(From Our Regular Correspondent)

July 17, 1933.

Reorganization of the Public Health Service of Berlin

The activities of the executive director of the public health service (at present, the state commissar, Dr. Klein) deal with six main departments: hospital service, psychiatric service, public welfare, emergency service, general administration, financial administration. There are twenty-six municipal hospitals, with 14,000 beds, and in addition twenty-four private hospitals, with 7,000 beds, together with forty-four smaller private clinics and sanatoriums, with 4,000 beds. In all Berlin, therefore, there is a total of 25,000 beds, or seven beds for each thousand inhabitants. The municipal institutions, Dr. Klein stated, have at present many vacant beds, with the exception of the Rudolf Virchow-Krankenhaus, which will accommodate 2,750 patients and has no vacant beds. In addition, there are four municipal therapeutic and care-taking institutions, with 7,000 beds, and special homes for idiotic children and psychopaths; also several infirmaries for chronic patients and aged persons. In Berlin a steady increase in the number of mental patients under care is observable, which is to be explained by the continual shifting of the population, since persons quitting Berlin commonly leave the aged and weakly relatives to the care of the municipal welfare department.

The distribution of patients among the various institutions is effected through the Zentral-Betten-Nachweis, a department of the emergency bureau, which annually finds accommodations for about 84,000 patients, in which mediatory capacity it takes careful account of the needs and wishes of the patients. Fifty municipal ambulances are available, and, in addition, eighteen private conveyances. In supplying first aid, the bureau collaborates with the fifty emergency centers located throughout the city, nineteen of which are in charge of a physician day and night. Associated therewith is the emergency service on the lakes in the vicinity of the city.

The public welfare service devotes itself chiefly to prospective mothers and to puerperants; but also infants and preschool children come under its care. The tuberculous and the venereal patients, and the psychopaths and the cripples are under its

charge. In 1932, 24,000 prospective mothers and 82,000 infants received care through these centers. School physicians examined 180,000 pupils. The school dental service cared for 160,000 children. This dental treatment signifies a great saving—especially for the *krankenkassen*. It can be assumed that all children on leaving school have well cared for gums and teeth.

The welfare aid service for the tuberculous is carried on in association with the *Landesversicherungsamt*, 160,000 persons with open tuberculosis being cared for at present. Their families likewise are receiving prophylactic care. Dr. Klein uttered a sharp warning against the Friedmann tuberculosis remedy. The welfare aid service for venereal patients in Berlin has at present 11,000 persons under medical supervision.

Until recently, the welfare aid service for the unemployed supplied medical aid through its own welfare physicians, who received a small compensation. It is planned to permit the free choice of physician, excluding, however, all but Aryan physicians.

The general administration of all these departments is in the hands of the bureau of health (*Städtisches Hauptgesundheitsamt*), in which are located also the bacteriologic institute and the chemical institute. About 500,000 examinations annually are made therein. Also the drinking water is controlled here.

The budget of the Berlin public health service amounted, in 1930, to about 125,000,000 marks (\$29,750,000). The budget for 1933 was originally placed at 84,000,000 marks (\$20,000,000), but owing to the financial condition of the city it has been reduced to 65,000,000 marks (\$15,470,000). A further reduction may, however, be necessary. The budgetary allowance for the hospitals is \$9,044,000; for the suppression of epidemics, \$1,927,800; for the psychiatric service, \$3,094,000; for public welfare, \$2,213,400. The public welfare service, Dr. Klein thinks, is being carried too far. The rendering of aid through a person's whole life is contrary to the principles of the national-socialists, who place the chief emphasis on the preservation of the healthy portions of the population—in number and in quality.

Changes in Management of the Robert Koch Institute

The Robert Koch Institute for infectious diseases, in Berlin, originally under the direction of Koch himself, was, for many years, under the directorship of Prof. Fred Neufeld, who has become known through his researches on tuberculosis. Prof. Karl Friedrich Kleine, who, for many years, has been a department director at the institute, has been appointed his successor. Kleine was one of the intimate collaborators of Robert Koch. In 1906, he was the director of the trypanosomiasis expedition. Later, he served as director of the crusade against trypanosomiasis in German East Africa. He was the first investigator who transmitted sleeping sickness to apes through the natural intermediate host, the tsetse fly (*Glossina*).

Eugenics as a New Subject for Medical Students

Frick, federal minister of the interior, has stated that arrangements must be made to give adequate attention to the science of hereditary health, in all grades of public instruction. The state commissar for the Bavarian public health service has approved the introduction of eugenics as a required examination subject in the medical curriculum. Professor Lenz of Munich, an authority on race hygiene, has given his views on the proposed plan in the *Münchener medizinische Wochenschrift*. He insists that race hygiene should be an independent main subject for study. It is not enough to make it a part of the required lectures on hygiene. He recommends that new special chairs for race hygiene be established. A course of lectures on genetics should be added to the preclinical studies as a required subject. For the clinical period, two new four-hour courses of lectures should be made obligatory: (1) hereditary transmission in man and (2) sociological and biologic bases of race hygiene. As

the introduction of an entirely new main subject appears impossible without changing the remainder of the curriculum, Lenz suggests a lengthening of the semesters. He thinks the short summer semester should be replaced by a full-length fall semester extending from September to December, and for the winter semester a spring semester extending from February to May should be substituted. In addition, he proposed the organization of a two-hour course on methods of human hereditary research in the winter, and a two-hour "colloquium" in the summer, for persons having a special interest in the subject. The directors of the Verband deutscher Medizinerschaften (league of medical students' associations) emphasize that, if such courses are to be introduced, it presupposes a far-reaching reorganization of the medical curriculum, in order to preserve the standards of medical education in general.

JAPAN

(From Our Regular Correspondent)

June 27, 1933.

The Increasing Population

The statistical bureau reports a remarkable increase in the population in 1932. The births numbered 2,182,743, an average of 249 per hour. The deaths numbered 1,174,875, an average of 134 per hour. The death rate was the lowest one during the last half century. The increase of the population was therefore 1,007,868; in 1931 it was 861,534.

Beds for Tuberculous Patients

According to the report of the home office, the government hospitals and sanatoriums for tuberculosis number sixty, with 4,376 beds, and the private ones number 329, with 5,369 beds. In addition there are twenty-five secondary sanatoriums with 3,857 beds. At the annual conference of health experts in Tokyo recently the question of establishing sanatoriums was discussed that the government might keenly feel the urgent necessity of isolating the serious cases of tuberculosis in order to prevent the rapid spread of the disease. But this work must be done on a large scale to achieve the purpose, and it will require about 10,000,000 yen. The tuberculosis prevention conference decided to present a resolution to the government urging an increase of 3,000 beds every year. The plan is to add 2,000 new beds every year. For the other 1,000 beds, vacancies in hospitals will be used. There are many such vacant beds. Those beds may readily be occupied at an expense of 600 yen a year. Such private organizations as the Red Cross or other charity hospitals will be encouraged to increase their beds every year in order to have about 120,000 beds for tuberculous patients.

Fiftieth Anniversary Medical School

The Jikei (charity) kai (society) medical school, founded by the late Baron Takagi in 1881, has graduated 3,338 students. It is one of the most distinguished private medical schools in Japan. June 6, the school celebrated its fiftieth anniversary as its new buildings were completed. Princess Takeda, the honorary president of the society, the prime minister, ministers of home affairs and education, and Prince Tokugawa were present. The emperor gave a donation. Four professors gave memorial lectures before the guests.

Celebration of the Completion of St. Luke's Hospital

After five years of construction, St. Luke's International Hospital celebrated its completion, June 5. Its ground lot amounts to about 3 acres and the seven story building has a floor space of about one acre. Prince Takamatsu, the younger brother of the emperor, was present. The other guests were the American ambassador, cabinet members and members of the American-Japanese Association, totaling about 300. The

hospital is fireproof, is equipped with electricity, has an excellent water supply, and is constructed with a view to withstanding earthquakes. The hospital has 475 beds, excluding fourteen beds for isolated patients.

Japanese Physicians in Foreign Lands

According to the reports made annually in March by the Japanese consuls in foreign countries, the Japanese practitioners residing there have of late remarkably decreased in number, especially in America and its territories. The greatest number of those is fifty-two practitioners in Honolulu, and the next is twenty-four in Los Angeles, but there had been twice as many before. In the Orient, the Philippine Islands have been said to be the place where Japanese doctors flourish most, but today there are only one third of the former number. The cause is not clear but may be attributed to the general depression.

Diathermy Machines and the Radio

For the first time in this country, a civil action has been brought against disturbing radio reception. Last December a private practitioner in Tokyo had a diathermy machine installed in his office for the purpose of electrotherapy. The radios in his vicinity became almost inaudible while the machine was in use. More than 150 listeners formed a group to protest against the monthly charge for their radio, on the ground that radio reception was impossible. The broadcasting station warned the doctor to prevent the disturbance. Unfortunately, in Japan there is no law against radio disturbance. With a view to obtaining a favorable judicial precedent, the broadcasting station brought a civil action. The decision of the court will be of great importance.

Athletics and the Health of Girls

Sports and games among young girls, especially school girls, are arousing great apprehension among parents about their health. Prof. Dr. M. Iwata of the Nohon Medical College reports, after examining 418 of those who had won championships, that 86.9 per cent began their athletic activities before they were 14 years of age and 86.7 per cent before menstruation began. The first menstruation of these girls began almost the same as that of school girls in general, but it was very irregular. According to other investigations, irregularity of menstruation of school girls in general averaged from 32.6 to 37.9 per cent, but that of the female athletes averaged 50.6 per cent. Pain with menstruation in the former was reported as from 38.09 to 48.39 per cent; in the latter, 56.33 per cent. Since the Labor Science Research Institute reports that the complete development of Japanese women occurs at the age of 18, younger girls should refrain from strenuous athletics for at least from one-half to one year after menstruation has become regularly established.

Marriages

JOSEPH FREDERICK GALLOWAY, Pereira, Colombia, South America, to Miss Leila Ford of Huntsville, Ala., at Montevallo, Ala., July 8.

FREDERICK RANDALL EASTLAND, National Soldiers Home, Va., to Miss Muriel Mann of Pittsburgh, June 20.

CLARENCE BRYAN FLANAGAN, Menominee, Mich., to Miss Leona Lavigne of Norway, June 26.

CARL H. ERNLUND, Boston, to Miss Lucy Maxwell Hodge of Princeton, N. J., July 15.

VINCENT J. FARRELL to Miss Ursula Helen O'Connor, both of Philadelphia, July 3.

PERCY CHANDLER GRIGG, Iloilo, P. I., to Miss Pauline Holland, April 15.

BEN F. EAGER, JR., San Diego, Calif., to Miss Elizabeth Hicks, May 26.

Deaths

John Milton Dodson * for many years dean of Rush Medical College, more recently director of the Bureau of Health and Public Instruction of the American Medical Association, and at the time of his death retired, died at his home in Chicago, August 15, aged 74 years, of uremia. Dr. Dodson was born in Berlin, Wis., Feb. 17, 1859. Following his education in the University of Wisconsin (A.B. 1880), he entered Rush Medical College, receiving his M.D. degree in 1882, and subsequently the M.D. degree from Jefferson Medical College in 1883. He also received the A.M. degree from the University of Wisconsin in 1887. He became demonstrator of anatomy in Rush Medical College in 1889 and professor of physiology in 1891, holding the two positions coincidentally until 1898. He then became professor of diseases of children, having held a similar position in the Woman's Medical College of Chicago from 1894 to 1897. In 1898 he became dean of Rush Medical College and coincidentally dean of medical students in the University of Chicago, holding both of these positions until 1923. In that year he was made executive secretary of the Bureau of Health and Public Instruction of the American Medical Association, in which capacity he was also associated with the editorial staff of *Hyeia*, being largely responsible for the department of Questions and Answers.

Dr. Dodson at one time was a trustee of the Chicago Medical Society and had been president of the Chicago Pediatric Society and also of the Chicago Pathological Society. During his career he contributed largely to medical periodical literature. During the World War he was medical adviser to the governor of Illinois and held the rank of Major in the Army Medical Corps. His membership in scientific organizations included the American Association of Anatomists, American Society for the Advancement of Science, the American Conference on Hospital Service and the American Veterans of the World War.

As dean of students in Rush Medical College, Dr. Dodson was especially beloved by those who came under his tutelage. The Alumni Association of Rush Medical College held a special banquet in his honor, presented him with a testimonial volume, and established a lectureship in his name. He was a well educated physician, with a fine appreciation of the classics of both medicine and literature generally. He was congenial, and his numerous friendships with physicians throughout the country testify to their appreciation of his fine qualities as a physician and as a man.

Arthur Bennett Rankin, Chicago; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1906; formerly instructor of orthopedic surgery, Northwestern University Medical School, professor and head of the department of anatomy, and associate professor of surgery, Loyola University School of Medicine; served with the Canadian Army during the World War; on the staffs of the Woodlawn, St. Bernard's, Illinois Central and Washington Park Community hospitals; attending surgeon to the Cook County Hospital, 1916-1918; aged 50; died, July 24, of coronary thrombosis.

John Anson Burket * Lieut., Colonel, U. S. Army, retired, Palo Alto, Calif.; State University of Iowa College of Medicine, Iowa City, 1907; entered the medical corps of the U. S.

Army in 1910 as a first lieutenant; served during the World War; was made a major in 1917, and retired in 1922; by an act of Congress in 1930 he was promoted lieutenant colonel, retired; on the staff of the Veterans' Administration Hospital; aged 51; died suddenly, July 9, of heart disease.

Wenzel Carl Gayler * St. Louis; Beaumont Hospital Medical College, St. Louis, 1901; past president of the Missouri State Medical Association; fellow of the American College of Surgeons; senior instructor in gynecology and obstetrics, St. Louis University School of Medicine; served during the World War; aged 56; on the staffs of St. Anthony's Hospital and the Evangelical Deaconess Hospital, where he died, July 12, following an operation for brain tumor.

Edwin Willis Rich * Col., U. S. Army, retired, Coronado, Calif.; Harvard University Medical School, Boston, 1900; entered the army as an assistant surgeon in 1901; was made a captain in the medical corps in 1906, and a major in 1912;

served during the World War; retired in 1922 as a lieutenant colonel; by an act of Congress in June, 1930, he was promoted to colonel, retired; aged 61; died, July 12.

George K. Throckmorton * La Fayette, Ind.; Rush Medical College, Chicago, 1887; fellow of the American College of Surgeons; formerly secretary of the county board of health, member of the city board of health and coroner; on the staffs of the La Fayette Home Hospital and St. Elizabeth's Hospital; aged 71; died, July 17, of heart disease.

Shannon Laurie Van Valzah * Major, M. C., U. S. Army, Denver; Johns Hopkins University School of Medicine, Baltimore, 1914; served during the World War; entered the medical corps of the U. S. Army as a first lieutenant in 1917 and was made a major in 1918; aged 45; died, July 11, of diverticulitis of the sigmoid and peritonitis.

Benjamin Frank Johnson, Winchester, Ky.; University of Louisville School of Medicine, 1885; Hospital College of Medicine, Louisville, 1886; member of the Kentucky State Medical Association; past president of the Clark County Medical Society; formerly member of the city board of health; aged 67; died, July 14, of heart disease.

Webster Fels Keller, Los Angeles; Medical Department of the University of Cincinnati, 1913; assistant professor of surgery in the department of ophthalmology, College of

Medical Evangelists; served during the World War; on the staff of the White Memorial Hospital; aged 44; died, June 25, of bronchopneumonia.

Leon George Brackett, Waukegan, Ill.; Chicago College of Medicine and Surgery, 1917; member of the Illinois State Medical Society; served during the World War; on the staff of the Lake County General Hospital; aged 47; died, July 19, in the Barnes Hospital, St. Louis, of cancer of the mediastinum.

Joseph S. McBride, Lyons, Kan.; Kansas City Medical College, 1898; member of the Kansas Medical Society; past president of the Rice County Medical Society; served during the World War; on the staff of the Lyons Hospital; aged 65; died suddenly, July 6, of myocarditis.

Hubert Augustus Castle, Pocatello, Idaho; Missouri Medical College, St. Louis, 1881; member of the Idaho State Medical Association; formerly member of the state board of medical examiners; aged 73; died, May 31, of cerebral hemorrhage and paraplegia.



JOHN MILTON DODSON, M.D., 1859-1933

Charles Alexander Rogers, Bakersfield, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1878; Rush Medical College, Chicago, 1879; veteran of the Spanish-American War; aged 82; died, June 13, of a fractured hip received in a fall.

Walter James Brinckerhoff, Brooklyn; Long Island College Hospital, Brooklyn, 1892; aged 63; died, July 18, in the Long Island College Hospital, of cerebral arteriosclerosis with cerebral thrombosis and lobar pneumonia.

Garrett Rittenhouse Miller ☉ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1925; on the staff of the Episcopal Hospital; aged 33; died, July 12, in the University Hospital, of heart disease.

Charles E. Boynton, Chicago; Hahnemann Medical College and Hospital, Chicago, 1891; member of the Illinois State Medical Society; aged 73; died, July 20, of injuries received when struck by an automobile.

John Van Rensselaer, Washington, D. C.; Columbian University Medical Department, Washington, 1889; member of the Medical Society of the District of Columbia; aged 70; died, July 8, at Kittery, Maine.

Robert Bruce Grimes, Jr., Philadelphia; Medico-Chirurgical College of Philadelphia, 1901; veteran of the Spanish-American and World wars; aged 58; died, July 17, in the U. S. Naval Hospital.

Leonard Harrison English, Mountain Lakes, N. J.; George Washington School of Medicine, Washington, 1913; served during the World War; aged 51; died, July 12, of poison, self-administered.

Karl E. Gryttenholm, Zumbrota, Minn.; King Fredericks University Faculty of Medicine, Christiania, Norway, 1891; aged 70; died, July 11, in a hospital at Red Wing, of acute myocarditis and asthma.

Benjamin Franklin West ☉ Seattle; Miami Medical College, Cincinnati, 1881; formerly a medical missionary; aged 75; died, July 2, of angina pectoris, arteriosclerosis, adenomatosis and enlarged thyroid.

Henry R. Pascoe ☉ Carroll, Iowa; Northwestern University Medical School, Chicago, 1906; aged 55; on the staff of St. Anthony's Hospital, where he died, July 7, of cardiac thrombosis.

Lem H. Lipsey, Wynne, Ark.; University of Louisville (Ky.) School of Medicine, 1891; member of the Arkansas Medical Society; aged 65; died, July 12, of carcinoma of the throat.

Lester Everett Smith, Tyler, Texas; University of Vermont College of Medicine, Burlington, 1899; served during the World War; aged 59; died, July 5, of acute pyelonephritis.

Louis A. Gaudin, Convent, La.; Tulane University of Louisiana Medical Department, New Orleans, 1894; aged 63; died, June 18, in the Hotel Dieu Hospital, New Orleans.

John Michael Fitzpatrick, Chicago; Loyola University School of Medicine, Chicago, 1919; aged 49; died, June 28, in a hospital at Detroit, of generalized peritonitis.

Roy Clarence Seaman, Cherokee, Iowa; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; aged 55; died suddenly, July 9, of cerebral hemorrhage.

Minard Roger Renshaw, Seattle; St. Louis University School of Medicine, 1932; intern at the Columbus Hospital; aged 29; died, June 5, of Banti's disease.

George M. Denton, Manila, Ark. (licensed, Arkansas, 1909); aged 52; was found dead, July 8, of chloroform poisoning, presumably self-administered.

Ellen Dean Moore, Santa Rosa, Calif.; Cooper Medical College, San Francisco, 1889; aged 88; died, June 15, of chronic myocarditis and hypertension.

Miriam Bitting Kennedy, Bala-Cynwyd, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1889; aged 68; died, June 23, of carcinoma.

Edwin Graves Kirby, La Grande, Ore.; Willamette University Medical Department, Salem, 1900; aged 62; died, July 2, of cerebral hemorrhage.

Edgar R. Browning, Flint Hill, Va.; University of Maryland School of Medicine, Baltimore, 1895; aged 62; died, July 8, of heart disease.

W. L. Hancock, Lebanon, Tenn.; University of Louisville (Ky.) School of Medicine, 1874; aged 81; died, June 27, of colitis.

Albert E. Hofer, Marion, S. D.; Barnes Medical College, St. Louis, 1900; aged 55; died, in June, of heart disease.

Milton H. Virden, Los Angeles; Ohio Medical University, Columbus, 1895; aged 73; died, June 19, of heart disease.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Emsules.—H. Planten & Son, Inc., Brooklyn, N. Y. Composition: A fatty oil, also volatile oils including pennyroyal, savin and parsley oil. For menstrual disorders. Fraudulent therapeutic claims.—[N. J. 19055; July, 1932.]

Elder Hook's Healing Balm.—A. Perley Fitch Co., Concord, N. H. Composition: Essentially a volatile, oil such as pineneedle oil, in an ointment base. For diphtheria, asthma, consumption, piles, etc. Fraudulent therapeutic claims.—[N. J. 19058; July, 1932.]

W. H. D. Special Medicine.—W. H. D. Special Mfg. Co., Woodston, Kan. Composition: Essentially magnesium carbonate and baking soda. For blood and stomach disorders, rheumatism, kidney trouble, etc. Fraudulent therapeutic claims.—[N. J. 19062; July, 1932.]

Gray's Helpuall.—Gray Helpuall Co., Hillsboro, N. H. Composition: Essentially peppermint oil, camphor, methyl salicylate and petrolatum. For catarrh, rheumatism, skin disorders, etc. Fraudulent therapeutic claims.—[N. J. 19063; July, 1932.]

Innerclean.—Innerclean Mfg. Co., Los Angeles. Composition: Senna leaves (50 per cent), cascara sagrada or a similar bark (about 30 per cent), anise seed and sassafras bark (about 10 per cent each). For constipation, etc. False and fraudulent therapeutic claims.—[N. J. 19066; July, 1932.]

Jurgelwicz's Anti-Rheumatic Mixture.—Mrs. E. A. Jurgelwicz, New Orleans. Composition: Potassium iodide, sodium salicylate, and a plant drug such as podophyllum, with glycerine and water. Fraudulent therapeutic claims.—[N. J. 19067; July, 1932.]

Humphrey's Bromated Pepsin.—Humphrey Drug & Chemical Co., Newark, N. J. Composition: Essentially acetanilid, baking soda, sodium acid tartrate, sodium citrate, citric acid, and small quantities of sodium bromide, caffeine, a bismuth compound. For "nervous debility," indigestion, liver and kidney troubles, dyspepsia, etc. Misbranded because represented to contain pepsin, which was not found; also misbranded because of fraudulent therapeutic claims.—[N. J. 19068; July, 1932.]

Can-U-Til-Lo Herb.—Can-U-Til-Lo Co., Camden, N. J. Composition: Coarsely cut caynote (*Ephedra antispythitica*). For rheumatism, kidney and blood disorders. Fraudulent therapeutic claims.—[N. J. 19074; July, 1932.]

Dunbar's System Tonic.—Lee Specialty Co., Detroit, Mich. Composition: Pills containing, essentially, extracts of plant drugs, including a laxative drug and iron (ferrous) sulphate. For rheumatism, blood, liver and kidney disorders, etc. Fraudulent therapeutic claims.—[N. J. 1075; July, 1932.]

Luesol.—Lipoidal Laboratories, Inc., New York. Composition: Essentially a mercury compound, iodide, sulphate, extracts of plant drugs and water. For syphilis. Fraudulent therapeutic claims.—[N. J. 19151; October 10, 1932.]

Osmogen.—Lipoidal Laboratories, Inc., New York. Composition: Essentially iodide, phosphate, extracts of plant drugs and water. For diabetes. Fraudulent therapeutic claims.—[N. J. 19151; October 10, 1932.]

Pierce's (Robert J.) Special Formula Double Strength Tablets.—Robert J. Pierce, Inc., New York. Composition: Essentially iron sulphate, extracts of plant drugs, including aloe, and volatile oil, including pennyroyal. A female regulator. Fraudulent therapeutic claims.—[N. J. 19152; Oct. 10, 1932.]

Fayro.—Kells Co., Newburgh, N. Y. Composition: Essentially epsom salt (87 per cent) and rock salt (13 per cent), with a small amount of an aromatic oil. For obesity. Fraudulent therapeutic claims.—[N. J. 19155; Oct. 10, 1932.]

Duncan's Ozon.—Duncan Chemical Co., St. Louis. Composition: Essentially pine oil. For rheumatism, kidney and bladder trouble, indigestion, pyorrhea, etc. False and misleading therapeutic claims.—[N. J. 19156; Oct. 10, 1932.]

Takara Hygienic Powder.—Takara Laboratories, Portland, Ore. Composition: Essentially boric acid, ammonia alum, carbolic acid, and a trace of menthol. Falsely claimed to be antiseptic. For "feminine hygiene," etc. Fraudulent therapeutic claims.—[N. J. 19371; November, 1932.]

Simmons Four-Fold Salve.—Wm. R. Warner Co., St. Louis. Composition: Essentially petroleum (90 per cent) and volatile oils (10 per cent), including camphor, menthol and methyl salicylate. For pneumonia, asthma, rheumatism, etc. Fraudulent therapeutic claims.—[N. J. 19467; December, 1932.]

Walker's Old Indian Health Tonic.—Walker Medicine Co., Atlanta, Ga. Composition: Epsom salt, iron (ferric) chloride, quinine sulphate and water. For indigestion, kidney and bladder troubles, dropsy, etc. Fraudulent therapeutic claims.—[N. J. 19162; Oct. 10, 1932.]

J & J Analgesic.—Johnson & Johnson, New Brunswick, N. J. Composition: Volatile oils (11.8 per cent), including menthol, camphor and methyl salicylate, boric acid (0.5 per cent), gummy material such as Irish moss (22.1 per cent), with 65.6 per cent of water. For headache, rheumatism, laryngitis, etc. Fraudulent therapeutic claims.—[N. J. 19167; Oct. 10, 1932.]

Choligestin.—F. H. Strong Co., New York. Composition: Sodium salicylate, baking soda, glauber's salts, bile salts, alcohol (13.7 per cent by volume) and water. For intestinal dyspepsia, gaseous indigestion, etc. Fraudulent therapeutic claims.—[N. J. 19168; Oct. 10, 1932.]

Lambert's Powders.—Lambert's Inc., Minneapolis. Composition: Essentially aspirin (nearly 7 grains to each powder) and acetanilide (2.3 grains to each powder). For rheumatism, neuralgia, la grippe, etc. Misbranded because amount of acetanilide was not declared on label. Fraudulent therapeutic claims.—[N. J. 19169; Oct. 10, 1932.]

Ozo Mist.—Adson Chemical Co., Inc., Buffalo. Composition: Essentially volatile oil (36 per cent by volume), including methyl salicylate, menthol and eucalyptol, alcohol (58 per cent by volume), and water. For hay fever, catarrh, asthma, etc. Misbranded because alcohol content was incorrectly stated. Fraudulent therapeutic claims.—[N. J. 19170; Oct. 10, 1932.]

I-Heal-I-Tone.—Shapley Drug Co., Inc., Deland, Ill. Composition: Essentially borax, zinc sulphate, and a trace of thymol. For skin disorders, leucorrhea, catarrh, hay fever, influenza, etc. Falsely claimed to be antiseptic. Fraudulent therapeutic claims.—[N. J. 19171; Oct. 10, 1932.]

Shapley's Vegetable Prescription.—Shapley Drug Co., Inc., Deland, Ill. Composition: Essentially plants drugs, including valerian, alcohol (14.3 per cent by volume), sugar and water. For female disorders. Fraudulent therapeutic claims.—[N. J. 19171; Oct. 10, 1932.]

Shapley's Liver Tonic.—Shapley Drug Co., Inc., Deland, Ill. Composition: Pills containing phenolphthalein. Fraudulent therapeutic claims.—[N. J. 19171; Oct. 10, 1932.]

Shapley's Derol.—Shapley Drug Co., Inc., Deland, Ill. Composition: Essentially mineral oil and volatile oils, including menthol and eucalyptol. For nose and throat troubles. Fraudulent therapeutic claims.—[N. J. 19171; Oct. 10, 1932.]

Shapley's Tonup.—Shapley Drug Co., Inc., Deland, Ill. Composition: Essentially plant drugs, including a laxative, with small amounts of calcium, magnesium and phosphorus compounds, with water and 5.3 per cent of alcohol. Tonic and "blood purifier." Fraudulent therapeutic claims.—[N. J. 19171; Oct. 10, 1932.]

Nalther Tablets.—M. A. Winter Co., Washington, D. C. Composition: Red pepper, spearmint and laxative drugs, including rhubarb, senna and aloë. For stomach, intestinal, liver and kidney disorders. Fraudulent therapeutic claims.—[N. J. 19172; Oct. 10, 1932.]

Flaxo.—Flaxo Co., Saginaw, Mich. Composition: Essentially fatty oils, such as linseed, with rosin and petrolatum. For infections, blood poisoning, boils, etc. Falsely claimed to be antiseptic. Fraudulent therapeutic claims.—[N. J. 19173; Oct. 10, 1932.]

Old Dr. Wesson's Angel of Peace and Solace of Life.—Brewer & Co., Inc., Worcester, Mass. Composition: Essentially alcohol (87.5 per cent by volume), chloroform (4.24 minims per fluidounce), ether, oleoresin, red pepper and volatile oils, including pine cajuput, menthol and camphor, colored red. For rheumatism, diarrhea, coughs, catarrh, etc. Chloroform content falsely declared. Fraudulent therapeutic claims.—[N. J. 19176; Oct. 10, 1932.]

Children's Comfort.—Brewer & Co., Inc., Worcester, Mass. Composition: Essentially a syrup containing a small proportion of extracts of plant drugs, flavored with anise oil. For dysentery, felons, colic, etc. Fraudulent therapeutic claims.—[N. J. 19176; Oct. 10, 1932.]

Rider's Household Liniment.—Haggard Rider, San Diego, Cal. Composition: Essentially a light mineral oil, such as gasoline, containing a trace of a vesicating agent, such as red pepper extract, and a trace of volatile vegetable oil, such as sassafras. For muscular rheumatism, bronchial cough, pleurisy, etc. Fraudulent therapeutic claims.—[N. J. 19177; Oct. 10, 1932.]

Hulbert's Phospho-Nux.—N. E. Hulbert & Co., New York. Composition: Essentially plant drug extracts, including nux vomica, with phosphorus, chloroform, alcohol and water. An alleged cerebrospinal tonic. Fraudulent therapeutic claims.—[N. J. 19178; Oct. 10, 1932.]

Analgesol.—Emde Pharmacal Co., Rahway, N. J. Composition: Essentially volatile oils, such as tar and turpentine oils, in an ointment base such as hydrous wool fat. For whooping cough, asthma, hay fever, etc. False and fraudulent therapeutic claims.—[N. J. 19181; Oct. 10, 1932.]

Jones Vegetable Herb Tablets.—Christiani Drug Co., Washington, D. C. Composition: Extracts of plant materials, including aloë and podophyllum. For "blood, kidney and liver," etc. Fraudulent therapeutic claims.—[N. J. 19186; Oct. 10, 1932.]

Sal-Va-Sena.—Millin Drug Co., Memphis, Tenn. Composition: Essentially epsom salt with iron, chloride, an extract from a laxative plant drug such as senna, and water. For kidney and liver disorders, etc. Fraudulent therapeutic claims.—[N. J. 19189; Oct. 10, 1932.]

Dill's Balm.—Dill Co., Norristown, Pa. Composition: Essentially ammonia, volatile oils including sassafras and cinnamon, with camphor, extracts of plant drugs, alcohol (61.8 per cent by volume) and water. For colic, diarrhea, cholera morbus, etc. Fraudulent therapeutic claims.—[N. J. 19191; Oct. 10, 1932.]

Hale's Household Tea.—Kenyon & Thomas Co., Adams, N. Y. Composition: Plant drugs including senna, buckthorn, goose grass (galium), tencurium and Oregon grape root (berberis). For blood and nerve disorders, catarrh, piles, etc. Fraudulent therapeutic claims.—[N. J. 19192; Oct. 10, 1932.]

Betalax.—Betalax Co., Inc., Mount Vernon, N. Y. Composition: Essentially hydrate magnesium oxide, sugar of milk and small amounts of magnesium carbonate, and oils of peppermint and anise. For indigestion, gastritis, etc. Falsely claimed to be an intestinal antiseptic.—[N. J. 19193; Oct. 10, 1932.]

Wilson's (B. O. and G. C.) Neuropathic Drops.—Winsol Inc., Boston. Composition: Essentially oleoresin of red pepper, volatile oils including camphor and a mint oil, with alcohol and water. For chills, cramps, cholera morbus, etc. Fraudulent therapeutic claims.—[N. J. 19195; Oct. 10, 1932.]

Shults' Infallible Ointment.—Shults Ointment Co., Chester, Pa. Composition: Essentially lead oleate and a tarry oil in an ointment base of wool fat and petrolatum. For sores, syphilitic ulcers, erysipelas, piles, etc. Fraudulent therapeutic claims.—[N. J. 19196; Oct. 10, 1932.]

Lynn's Blood Remedy.—S. Pfeiffer Manufacturing Co., St. Louis. Composition: Essentially iron and ammonium citrate, potassium iodide, extracts of plant drugs such as sarsaparilla, senna and cascara sagrada, with sugar and water. For blood and liver disorders, etc. Fraudulent therapeutic claims.—[N. J. 19198; Oct. 10, 1932.]

Penor's Antiseptic Uterine Tablets.—G. D. Stoner Co., Lakeland, Fla. Composition: Essentially common salt. For female disorders, cancer, etc. Fraudulent therapeutic claims.—[N. J. 19199; Oct. 10, 1932.]

Seven Aids to Health.—Dunn Medicine Co., Inc., Birmingham, Ala. Composition: Epsom salt, iron and ammonium citrates, sodium phosphate and sodium salicylate, flavored with saccharine and oil of cinnamon. For blood, kidney and stomach disorders, etc. Fraudulent therapeutic claims.—[N. J. 19200; Oct. 10, 1932.]

Morrison's Old English Liniment.—James W. Foster Co., Bath, N. H. Composition: Essentially a nonvolatile oil, such as fish oil, and volatile oils, such as pine-ter oil, turpentine oil and kerosene. Fraudulent therapeutic claims.—[N. J. 19351; November, 1932.]

O and O Medicine.—Pabst Chemical Co., Chicago. Composition: Essentially volatile oils, resins, alcohol and water. For venereal diseases. Fraudulent therapeutic claims.—[N. J. 19358; November, 1932.]

Keros.—Continental Laboratories, Inc., New York. Composition: Essentially boric acid, carbonates, an organic acid and a trace of oxyquinoline sulphate. For leucorrhea, vaginitis and "as a prophylactic against infection, specific or otherwise." Fraudulent therapeutic claims.—[N. J. 19359; November, 1932.]

Glyco-tan-phen.—Hagedon Chemical Co., Indianapolis. Composition: Small proportions of carbolic acid, tannin and menthol with glycerine and water. For tonsillitis, pyorrhea, etc. Falsely claimed to be antiseptic. Fraudulent therapeutic claims.—[N. J. 19360; November, 1932.]

Ward's Kidney and Backache Pills.—Ward's Medical Co., Winona, Minn. Composition: Saltpeter, methylene blue and extracts of plant drugs, including bear berry, buchu and juniper. Fraudulent therapeutic claims.—[N. J. 19363; November, 1932.]

Ward's Kidney and Bladder Medicine.—Ward's Medical Co., Winona, Minn. Composition: Sodium phosphate (11 per cent), sodium acetate (1.5 per cent), sodium benzoate (0.3 per cent), extracts of plant drugs including bear berry and a laxative drug, vanillin and coumarin flavoring, with glycerine and water. Fraudulent therapeutic claims.—[N. J. 19363; November, 1932.]

Capillaris-X.—Capillaris Manufacturing Co., Montclair, N. J. Composition: Essentially a petrolatum base containing ammoniated mercury and boric acid. For scalp and skin diseases, etc. Fraudulent therapeutic claims.—[N. J. 19366; November, 1932.]

Gly-Cas.—Glycas Medicine Co., Indianapolis. Composition: Capsules containing extracts of plant drugs including aloë, and a small amount of an iron compound. For rheumatism, blood and nerve disorders, etc. Fraudulent therapeutic claims.—[N. J. 19367; November, 1932.]

Stomach-Rite.—John Wilbur, Daughter Co., Inc., Westerly, R. I. Composition: White tablets, about 8 grains of chalk, about 1½ grains of baking soda, with starch and sugar; pink tablets, red pepper and laxative drugs such as aloin and podophyllum extract. For stomach and liver disorders, chronic appendicitis, etc. Fraudulent therapeutic claims.—[N. J. 19368; November, 1932.]

Uri-Tox.—John Wilbur, Daughter Co., Inc., Westerly, R. I. Composition: Iron (ferrous) carbonate, quinine, strychnine, and ginger. For blood and nerve disorders. Fraudulent therapeutic claims.—[N. J. 19368; November, 1932.]

San-Cura Ointment.—Thompson Medical Co., Titusville, Pa. Composition: Essentially a petrolatum base, with small amounts of carbolic acid and camphor. Falsely claimed to be antiseptic. Fraudulent therapeutic claims.—[N. J. 19370; November, 1932.]

Buhler Oil.—Gelschaft Laboratories, New York. Composition: Volatile oils (about 77 per cent), including turpentine, menthol and camphor, and a fatty oil (about 23 per cent). For rheumatism, gout, lumbago, etc. Fraudulent therapeutic claims.—[N. J. 19469; December, 1932.]

Mike Martin's Liniment.—Vasco Products, Inc., Brentwood, Md. Composition: Essentially volatile oils (11 per cent), including methyl salicylate and oleoresin of red pepper, incorporated in a fatty oil. Fraudulent therapeutic claims.—[N. J. 19376; November, 1932.]

Dead Shot.—Dead Shot Co., Marian, Ark. Composition: Essentially sulphur (7.4 per cent), volatile oils (28 per cent) including turpentine oil, methyl salicylate and camphor, carbolic acid (0.5 per cent), ammoni-

ated mercury (6.3 per cent), arsenic trioxide (0.014 per cent), petrolatum (vaseline) and wax. For eczema, erysipelas, old sores, etc. Fraudulent therapeutic claims.—[N. J. 19382; November, 1932.]

Vege-Lene Stomach and Liver Pills.—Vege-Lene Co., Warsaw, N. Y. Composition: Extracts of plant drugs, including aloe, podophyllum and nux vomica. Fraudulent therapeutic claims.—[N. J. 19383; November, 1932.]

Vigorex Tablets.—J. A. Roldan Co., St. Louis. Composition: Tablets for men contained chromium sulphate, a calcium compound, phosphates, small amounts of an iron compound and glandular material, a trace of strychnine, sugar and starch; tablets for women contained all these ingredients except the glandular material and, in addition, a zinc compound, a fixed oil and carbonate of lime. Vigorex Tablets for Men sold for sexual debility, nervousness, etc.; Vigorex Tablets for Women sold for neurasthenia, menopause disturbance, sterility, etc. Fraudulent therapeutic claims.—[N. J. 19389; November, 1932.]

Planters Cuban Oil.—Planter Medicine Co., Baltimore. Composition: Essentially kerosene, chloroform and volatile oils, including methyl salicylate, camphor, sassafras and citronella, colored red. For rheumatism, neuralgia, sore throat, etc. Fraudulent therapeutic claims.—[N. J. 19391; November, 1932.]

Allen's Rheumatic Treatment.—Hart M. Allen Laboratories, Los Angeles. Composition: White tablets, each containing acetanilid (5 grains), caffeine and baking soda; blue tablets each containing 7.2 grains of aspirin. Fraudulent therapeutic claims.—[N. J. 19396, November, 1932.]

Mantone.—Wachsallan Mantone Medicine Co., Inc., Baltimore. Composition: Sugar, aloe, sodium salicylate, caramel and water. "General system tonic." Fraudulent therapeutic claims.—[N. J. 19458, December, 1932.]

Blair's Female Tablets.—Becker Chemical Co., Cincinnati. Composition: Plant drugs, including a bitter drug. Fraudulent therapeutic claims.—[N. J. 19459; December, 1932.]

Blair's Ton-Ko-No Herbs.—Becker Chemical Co., Cincinnati. Composition: A mixture of ground plant drugs, including licorice and laxative drugs. For stomach, kidney and liver disorders, rheumatism, etc. Fraudulent therapeutic claims.—[N. J. 19459; December, 1932.]

Greenhalgh Wash.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially small amounts of compounds of magnesium, iron and aluminum, sulphates, borates, phosphates nitrates, sulphur, plant tissue and extracts of plant drugs, with sugar, glycerine and water. For eczema, cancers, female weakness, etc. Fraudulent therapeutic claims.—[N. J. 19463, December, 1932.]

Greenhalgh Naturello.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially a clay-like material, containing magnesium and aluminum compounds, silicates and carbonates, and a trace of an iron compound. For rheumatism, stomach disorders, cancer, etc. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Greenhalgh Locus Oil.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially a fatty oil, with small quantities of spearmint oil and methyl salicylate. For goiter, rheumatism and lung trouble. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Greenhalgh Liniment.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially ammonia, extracts of plant drugs and small quantities of volatile oils, with glycerine and water. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Greenhalgh Cancer Powder.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially nitrates, sulphates, borates, sulphur and salt, with traces of magnesium and iron compounds, rosin and sugar. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Greenhalgh Canker Syrup.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially acetic acid, borates, sulphates, nitrates, traces of magnesium and iron compounds, sulphur, extracts of plant drugs, sugar and water. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Mountain Rush Blood Purifier (Greenhalgh).—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: The herb *Ephedra viridis*. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Greenhalgh Blood Purifier.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially small amounts of compounds of magnesium and aluminum, borates, sulphates and phosphates, traces of sulphur and chloride, with extracts of plant drugs, sugar and water. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Greenhalgh Cough Syrup.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially magnesium and iron compounds, sulphates, phosphates, borates, sulphur, acetic acid, extracts of plant drugs, sugar, a trace of alcohol, and water. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Greenhalgh Kidney Powder.—Greenhalgh Remedy Co., Salt Lake City, Utah. Composition: Essentially nitrates, sulphates, borates, sulphur, traces of magnesium and iron compounds, with rosin and sugar. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Vernon's Anti-Flu.—J. W. Vernon, Pasadena, Calif. Composition: Petrolatum with volatile oils, such as eucalyptus and camphor. Fraudulent therapeutic claims.—[N. J. 19463; December, 1932.]

Viavi.—Viavi Co., San Francisco. Composition: (Liquid) essentially glycerine, extracts of plant drugs including golden seal and water; (verate) ointment containing tannin, berberine and a trace of golden seal in a base of cocoa butter and a petroleum product. For catarrhal and inflammatory conditions of nose, throat, stomach, kidneys, etc. Fraudulent therapeutic claims.—[N. J. 19466; December, 1932.]

Correspondence

MORE UNFAIR ADVERTISING BY HARROWER

To the Editor:—In a recent publication of the Harrower Company, an article appeared captioned "Harrower and Engelbach." This takes unfair advantage of the late Dr. William Engelbach. He not only would have resented but also clearly and definitely refuted any such association. I feel that my duty is to repudiate this form of advertising, and in so doing I am but voicing the resentment of his numerous medical friends, former students and associates.

A major portion of Dr. Engelbach's life was devoted to teaching the general profession sound diagnostic and therapeutic endocrine medicine, in opposition to the illogical claims of hyperenthusiastic physicians and unscrupulous pharmaceutical houses. His medical prestige was self earned. He was never in accordance with this man's theories nor could he condone his methods of advertising to the profession.

ROBERT L. SCHAEFER, M.D., Detroit.

1304 Kresge Building.

"A NEW SIGN OF PERICARDIAL EFFUSION"

To the Editor:—In THE JOURNAL, May 27, in an article entitled "A New Sign of Pericardial Effusion," Eli Moschcowitz describes the "abrupt transition from pulmonary resonance to cardiac flatness" in such conditions, stating that this sign, "so far as I can gather, has not been described before." Having often heard this sign described in courses on physical diagnosis and seen it demonstrated at the bedside, I was somewhat surprised to see it again mentioned, especially as a new sign, and, above all, in THE JOURNAL. A very casual review of some of the textbooks and monographs on heart disease published during the past forty years confirmed the opinion that it is a well known and frequently described physical finding, although Cabot's and Norris and Landis's books on physical diagnosis do not mention it and it is not spoken of in the articles on pericarditis in Cecil's or Osler's textbooks. A. E. Sansom (The Diagnosis of Diseases of the Heart and Aorta, 1892, p. 157) stresses it, saying that with pericardial effusion "relative cardiac dulness does not exist; the transition from the resonance of the lung to a very marked dulness is abrupt." In Allbutt's System (6:763, 1898) the sign is described by F. T. Roberts, who speaks of Dr. Sansom's "stress of it," and Babcock (Diseases of the Heart and Arterial System, 1903, p. 78) again speaks of it, stating that Bauer and Sansom both attach great importance to the "abruptness of the transition." In a small outline on physical diagnosis, W. K. Draper and V. H. Norrie (Notes on Physical Diagnosis, 1899, p. 61) in speaking of pericarditis with effusion, state that "if the amount of fluid is small the area of cardiac dulness is not increased but there is an abrupt change from normal pulmonary resonance to flatness." Again, in Osler's System (4:52, 1915) McPhedran speaks of it in his article on diseases of the pericardium. No doubt a more careful review would yield still more references to this often mentioned sign. None of the articles quoted give references antedating Sansom. THEODORE B. RUSSELL, M.D.,
Bellevue Hospital, New York.

[NOTE.—The letter was referred to Dr. Moschcowitz, who replied:]

To the Editor:—I am not surprised that the sign of pericardial effusion, which I described, had been previously observed, because it is apparently so obvious; but I confess that the references mentioned had escaped me. My readings, I admit, were largely devoted to the most modern of textbooks on

physical diagnosis and on diseases of the heart. These, singularly enough, are silent with respect to the sign. At all events, it is apparently not widely known, as evidenced by the fact that it appeared novel to every one to whom I had demonstrated the sign for the past few years in various hospital wards. I am deeply grateful for having my attention called to these references.

ELI MOSCHCOWITZ, M.D., New York.

THE FORM OF THE FECES

To the Editor:—I have read with interest the reports of Cowgill and his co-workers on their studies of the laxative action of bran. One, on the form of the stool as a criterion of laxation, which appeared in the issue of THE JOURNAL for July 22, contains statements and conclusions that are somewhat misleading, and thus the sale of bran rather than health may be promoted.

One statement, "Our observations support the more general view . . . that food residues require from about sixteen to twenty-four hours to traverse the alimentary tract" was based on the "interval between defecations" and is therefore irrelevant to determine the absorption. Again, the statement "we became impressed with . . . purely subjective criteria of laxation; namely (a) the ease with which defecation takes place, and (b) the presence or absence of a sense of complete emptying" appears misleading. If such criteria have a meaning, the semifluid feces of diarrhea, which are sometimes too easy to pass and give a most complete sense of emptying, are more normal than the sausage-shaped stool. The conclusion that "the fecal unit type of Burnett be regarded as one extreme indicative of constipation" appears erroneous. If such a conclusion is correct, the "fecal unit type" of the rat, guinea-pig, rabbit, sheep, deer and horse must also be regarded as one extreme indicative of constipation in these animals; and as this type of human feces is frequently dejected twice during the day (Burnett, F. L.: *Faulty Food Factors and Atonic Constipation*, THE JOURNAL, Sept. 27, 1924, p. 996) and constipation means infrequent defecation, the conclusion is erroneous. As constipation is frequently relieved by the regulation of the normal food and habits of a patient, as shown by Thaysen (*Ugesk. f. Læger*, 81:4 [Jan. 2], 37 [Jan. 9], 91 [Jan. 16] 1919) and also in my article just cited, the use of bran or even yeast is unnecessary.

To those uneducated in the complex and delicate adjustments of the human body in health or in disease, impressions of "the ease of evacuation" and "a sense of complete emptying of the bowel" may be proper criteria to determine the normal form of the human feces. To others who have a sound and scientific point of view, data deduced from comparative physiology, human colonic functions, and the relation of the form of the feces to health and disease are essential for this purpose. Then, as "the fundamental process of nutrition is the sum of the processes by which an animal . . . absorbs, takes in, and utilizes food substances" (Webster's New International Dictionary, Springfield, Mass., G. & C. Merriam Company), the nutrient substances that pass through the wall of the intestine and into the body—or the absorption—are the chief consideration for the normal development and maintenance of the tissues. The difficulties of absorption have recently been described by Minot (*New England J. Med.* 208:1285 [June 22] 1933). He writes: "The physician caring for patients with arthritis . . . should be acquainted with . . . work on anabolic nutrition and intestinal functions. Little is known concerning the difficulties of absorption and utilization of food products from the digestive tract and regarding what particular food factors may improve gastro-intestinal function. . . . It is probable that significant degrees of such disturbances may arise in arthritis and be overcome by well chosen diets."

FRANCIS L. BURNETT, M.D., Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TENNIS ELBOW

To the Editor:—Would you kindly outline in detail the most recent and generally accepted therapy for the condition known under the various headings as "tennis elbow," "radiohumeral bursitis" and "epicondylitis of the humerus"? The type of disability to which I refer is generally regarded as a result of trauma from such activities as tennis, golf, lifting or any occupation that involves an unusual stress and strain on the parts involved. I am not presuming to have you include in your reply any joint involvements that may have their origin in various foci of infection or from a disturbance of metabolic activities. Please omit name.

M.D., Oregon.

ANSWER.—Because the exact pathologic changes of the clinical syndrome known as "tennis elbow" have not been described, there is no specific or universally accepted treatment for this condition. Numerous suggestions, however, have been made, any one or combination of which may give relief. Among these are:

1. Rest. This may be accomplished by the application of a cock up splint in order to relax the muscles attached to the external condyle. (Hansson, K. G., and Horwich, I. D.: *Epicondylitis Humeri*, THE JOURNAL, May 17, 1930, p. 1557). The elbow may be included to obtain more rest and greater relaxation.
2. Physical therapy in the form of dry heat, diathermy and gentle massage.
3. Roentgen therapy.
4. Infiltration of the tender tissues with procaine hydrochloride in saline solution.
5. Manipulation. G. P. Mills (*Treatment of Tennis Elbow*, *Brit. M. J.* 1:12 [Jan. 7] 1928) advises sudden hyperextension of the forearm while it is in pronation and while the fingers and wrist are flexed, with the patient under a general anesthetic. At the same time pressure is applied over the epicondyle. Relief, he claims, is immediate. The arm is useful, though tender for a while.
6. Firm digital pressure over the radiohumeral bursa, in order to rupture it, is recommended by Louis Carp (*Tennis Elbow [Epicondylitis] Caused by Radiohumeral Bursitis*, *Arch. Surg.* 24:905 [June] 1932). There is immediate alleviation of symptoms and almost complete disappearance of signs in the cases he reports.
7. Operative therapy. This is not recommended unless conservative treatment fails to relieve prolonged or recurrent pain and disability. When decided on, the procedure may be either: (a) excision of the subcutaneous fat, fascia and periosteum of the epicondyle, or (b) excision of the radiohumeral bursa, which, when present, lies beneath the conjoined tendon just below the epicondyle and over the radiohumeral joint. Normally it is 1 by 0.5 cm., with thin friable walls, and contains a little clear fluid. Occasionally it is calcified and may generally be demonstrated on roentgen examination.

ALLERGIC REACTION TO HONEY

To the Editor:—Recently I have seen two patients who were acutely ill from eating honey. I find no mention of such a condition in my textbooks, but I find that it is fairly common in some of the local doctors' experience. Please give me all the information you have on this subject. The symptoms of which the patients complain are nausea, vomiting, weakness, generalized numbness and impaired vision. The two that I saw appeared acutely ill, were shocked, were covered with cold perspiration, and had extremely weak, slow pulse. Our people believe that there are two causes for the bad effects: first, that the bees obtain honey from the flowers of mountain ivy or laurel; second, to the fact that the honey is new. Onset usually takes place about two hours after the ingestion of the honey.

JAMES H. McNEILL, M.D., North Wilkesboro, N. C.

ANSWER.—The symptoms suffered by these two patients were due to severe allergy from honey. Allergists recognize this tendency of honey to produce marked sensitization reactions and many reports of such disturbances have appeared in the literature. Thus, Xenophon described severe headaches from honey. Hutchinson in his book "The Pedigree of Disease" published in 1884 noted idiosyncrasies to honey. Duke more recently reported two cases of severe abdominal symptoms similar to those observed by the questioning physician. One of his patients at the age of 27 ate an entire cake of honey, after which the slightest bit always produced severe abdominal pain. In 1930, Freeman reported unconsciousness for seven minutes

due to honey. Smith in 1909 stated that his buckwheat-sensitive patient could not tolerate honey from bees that fed on buckwheat blossoms but could take other types of honey. Walker in 1917 reported asthma arising from the ingestion of clover honey, and Menaugh in 1928 studied a patient whose urticaria was due to this food. Three patients with severe allergic symptoms and several others with milder disturbances have been studied by Rowe, as reported in his book "Food Allergy." Makai, as stated by Coca, Walzer and Thommen in their book on "Asthma and Hay Fever," found that many children who had received injections of horse serum over a period of four months and who were fed honey developed severe respiratory and gastro-intestinal symptoms from it, whereas untreated children tolerated honey without difficulty. No explanation of this observation was offered.

The allergic reactions may arise from specific hypersensitivity to the pollens of the flowers from which the honey is obtained, as suggested by the reports noted and by the experience of many physicians as indicated in the question. It is probable that a specific allergy is also present in many patients to some protein of the bee itself which is secreted in honey and that the type of the resulting symptoms depends on the degree and the location of the sensitized tissue cells. The article by Benson and Semenov on "Allergy in Its Relation to Bee Sting" (*J. Allergy* 1:105 [Jan.] 1930) is of interest and indicates that allergy to the intrinsic bee protein is probably responsible for such reactions.

WASSERMANN FAST SYPHILIS

To the Editor:—I have been treating a patient with syphilis for two years. The presence of the infection was detected inadvertently during a complete examination in which some blood was sent to the laboratory. The patient had gonorrhea and a chancre in 1920. He had had at that time a course of eight injections in the arm which probably were arsphenamine but which made him sick. He also had a few pills by mouth. He did not have further treatment or blood test since and considered himself cured. His initial visit was with regard to a sacro-iliac strain. The first positive blood Wassermann reaction on his initial visit was Oct. 15, 1931. He was immediately started on iodides by mouth and sodium bismuth thioglycollate, 3 grains (0.2 Gm.), intramuscularly, of which he had ten treatments at intervals of four days. Then followed nine treatments of mercurosal, 1½ grains (0.1 Gm.), at the same interval; then eight treatments of nearsphenamine, 0.6 Gm. Then the patient had six more of mercury as before but this time with poor tolerance, so he finished this course with four treatments of a bismuth compound. Immediately following this he had again nearsphenamine, receiving five treatments at weekly intervals as before. The blood Wassermann reaction, June 18, 1932, approximately six months after the beginning of treatment, was still strongly four plus. June 21, the patient had another series of nearsphenamine, ten treatments this time, and, September 16, the blood was still strongly four plus. From September 26 to November 28, the patient had ten more nearsphenamine treatments. He was then thought to have had enough arsenic and was placed on mercurial rubs, of which he accurately did thirty-four. Unfortunately, he obtained the mild mercurial ointment instead of the stronger and so did not obtain as much mercury as was hoped. The blood Wassermann reaction, Jan. 24, 1933, was still strongly positive, four plus. From February to April of this year the patient has had eight nearsphenamine treatments of 0.6 Gm. each and a test on the 18th of April was still positive. I am afraid of the dangers of causing an aplastic anemia with any more arsenic. The patient, curiously, has developed heavy colds with the course of arsenic. He looks well and has no external evidence of syphilis, and, while the spinal fluid has never been checked, there is no evidence whatever of central nervous system involvement. His wife had a one plus blood, which promptly cleared under mild active treatment and has been checked many times since and is still negative. Is this a Wassermann fast case, which it apparently seems to be? What further type of treatment would you suggest? What reassurance can be given to the patient as far as ever curing him? Has the case been overtreated? Please omit name and town.

M.D., Michigan.

ANSWER:—One is not justified in stating that this patient is Wassermann fast until a critical examination has been made of the heart and the spinal fluid. Active neurosyphilis frequently remains asymptomatic and shows no clinical evidence of its presence for many months or years after the onset of a syphilitic infection, and consequently it is quite unwise to assume that the absence of physical signs excludes this possibility from further consideration. A spinal fluid examination that includes cell count, globulin, colloidal gold and a quantitative Wassermann test is certainly indispensable for the interpretation of a case of this sort.

As far as the heart is concerned, the patient should be seen by a competent cardiologist whose examination will include an electrocardiogram and an orthodiagram.

While at first sight it would appear that the patient has had a rather large amount of treatment, it has leaned rather heavily on the side of the arsphenamines and he has had comparatively little of the resistance-building properties of bismuth. Granting that the cardiovascular examination and the spinal fluid report are negative, it would seem imperative to continue a rather intensive course of twenty or thirty injections of an oil-soluble

bismuth compound. One might also consider the advisability of using from twenty to forty injections of bismuth arsphenamine sulphate or the administration of colloidal mercuric sulphide. The patient has certainly not been overtreated, but his treatment has been poorly directed, as he has had little concurrent use of an arsenical and a heavy metal. Cure in syphilis is always presumptive, never certain, and it is much safer merely to tell the patient that by continuance of treatment in association with proper investigation of the cardiovascular and nervous systems he may probably expect arrest and an asymptomatic future.

ALLERGY TO PYRETHRUM

To the Editor:—A woman, aged 26, began to have a profuse nasal discharge during July of last year, accompanied by a blocking of the nasal passages so that she had to breathe through the mouth. Ephedrine sprays gave only partial and temporary relief. One nose and throat specialist advised an operation. Another competent rhinologist diagnosed the case as one of allergic rhinitis and advised skin tests to determine the specific sensitivity. The skin tests showed a marked sensitivity to pyrethrum and very mild reactions to several fish proteins, cedarwood, boxwood, orris root, and bacteria found in the upper respiratory tract. In November, 1932, the patient was started on a full course of subcutaneous injections of pyrethrum extract as prepared by the Arlington Chemical Company. Toward the end of a series of seventeen injections considerable relief was obtained from all nasal symptoms, the patient being once more able to breathe through the nose and to smell and taste her food. The last dose given was 0.5 cc. of a 1:100 dilution. At the end of the series of injections the patient herself stated that she was 95 per cent improved. A month elapsed, when the patient had a return of the profuse watery nasal discharge, sneezing, and blockage of the nasal passages. Two injections of the same solution relieved her again. Another symptom-free month passed and once more the same symptoms returned. This time a series of ten injections, gradually working up to 0.5 cc. of a 1:100 dilution, had to be given before relief was obtained. The patient was told that she would probably have to have one injection a month to keep her symptom free. For a period of six weeks she was again symptom free, when against her physician's advice she smoked some cigarettes, the tobacco of which she was warned contained some pyrethrum. Now her nasal symptoms are almost as bad as they were before the specific therapy was started. She is frequently exposed to tobacco smoke and it makes her feel uncomfortable and usually causes her to sneeze and her nose to clog up. This is especially true if cigars are being smoked. She now avoids smoking herself and also avoids the other substances to which she was shown to be slightly sensitive. Her previous history and family history are negative, except that one brother has attacks of asthma, which were proved to be due to sensitivity to dog hair. There never were any pulmonary or ocular signs or symptoms. I should like to know how often one should repeat the pyrethrum injections. Is 0.5 cc. of a 1:100 dilution a sufficiently large maximum dose? In your opinion would a series of injections of an autogenous vaccine made from bacteria found in the upper respiratory tract be of value? Is there any other treatment you would recommend? Please omit name.

M.D., New York.

ANSWER:—Hypersensitivity or allergy to pyrethrum is not uncommon and there are several reports in the literature:

- Garratt, J. R., and Bigger, J. W.: Asthma Due to Insect Powder, *Brit. M. J.* 2:764 (Oct. 27) 1923.
Ramirez, M. A.: Pyrethrum, Etiologic Factor in Vasomotor Rhinitis and Asthma, *J. Allergy* 1:149 (Jan.) 1930.
McCord, C. P.; Kilker, C. H., and Minister, Dorothy K.: Pyrethrum Dermatitis, *THE JOURNAL*, Aug. 6, 1921, p. 448.
Vaughan, W. T.: Food Allergy in Specialties and in General Medicine, *J. Lab. & Clin. Med.* 15:726 (May) 1930.
Piness, George, in discussion on Vaughan, W. T.: The Effect of Allergic Reactions on the Course of Nonallergic Diseases, *J. Allergy* 1:188 (Jan.) 1930.

Pyrethrum has been the cause of attacks of bronchial asthma and vasomotor rhinitis, and many cases of dermatitis have occurred in persons who have handled this material in industrial work.

Pyrethrum is a plant belonging to the family Compositae and is a section of the genus *Chrysanthemum*. It grows largely in Asia but is also cultivated in southern France and in California. The dried flower of the plant is finely pulverized and contains strongly insecticidal principles. This property is its chief reason for industrial use. Pyrethrum is a constituent of most insect powders and many fly repellent solutions; it is in wide use for spraying on plants, for eliminating household pests, such as roaches, and to kill moths and mosquitoes. Contact, therefore, can come to those who manufacture the insecticide, to gardeners who are near the flower, to those who use the insect powder or liquid, and to those who visit theaters and other places where spraying has been carried out. Complete avoidance, then, of all chrysanthemums and their products is essential. No form of tobacco contains pyrethrum; in the query, symptoms were attributed to pyrethrum in tobacco. It is true, however, that tobacco, as well as many other substances, is frequently mixed with pyrethrum in making insecticides.

Desensitization, in view of the success heretofore, would seem to be indicated, and it would be well to repeat the final dose of 0.5 cc. of 1:100 pyrethrum extract every two weeks for

about a year. An autogenous respiring vaccine might help, but its good results, if any, would be nonspecific, in all probability, and hence would be only temporary.

In this case one other factor should not be neglected. It is stated that there was a slight positive test for orris root. This is the main ingredient of many cosmetics, face powder, talcum powder and perfumes. It would be well to retest for orris root, both cutaneously and intracutaneously, and, if positive, to desensitize against orris root as well as pyrethrum; at the same time, absolute avoidance of orris-containing cosmetics is essential. Orris-free cosmetics are on the market and are advertised in medical journals, especially the *Journal of Allergy*.

ALTITUDE AND ALLERGY

To the Editor:—Will you please advise me whether high altitude (and of what minimum height) is of alleviative value in the treatment of allergic vernal catarrh. Have the White Mountains any superior therapeutic value over the Adirondacks? Are there any specific localities in these mountain chains better than others? Any reference on the subject of climate in this condition will be appreciated. Please omit name and address.

M.D., New Jersey.

ANSWER.—The question implies that the vernal conjunctivitis has been diagnosed as allergic; but, since the specific allergic factor in the case is not mentioned, it is rather difficult to answer the question satisfactorily. The present status of the etiology of vernal conjunctivitis is not definitely settled. There have been a number of reports which tend to show that the condition may be allergic, at least in some cases (Fort, A. G.: Vernal Conjunctivitis: Some New Observations on Treatment, *J. M. A. Georgia* 12:101 [March] 1923. Woods, A. C.: The Application of Immunology to Ophthalmology, *Arch. Ophth.* 53:321 [July] 1924. Lehrfeld, Louis: Observations on Eighty-Seven Cases of Vernal Conjunctivitis at the Wills Hospital [1929-1931], *Arch. Ophth.* 8:380 [Sept.] 1932). Pollen has been most frequently suspected. Also foods and various inhalant allergens have been incriminated. The older ideas of photosensitivity and possible other causes cannot be entirely disregarded. The difficulties with the explanation of this disease on the basis of pollen allergy are the absence of a hereditary tendency, the onset of symptoms in February or March before pollen is present in the air, the absent or slight reactions to pollens by skin test, and the rather indifferent response to pollen avoidance or therapy.

If it has not already been done it would be advisable to conduct an allergic investigation in the case cited. Cutaneous tests should be made with the common and prevalent air-borne pollens, foods and inhalants. If these are negative, conjunctival tests should be made, particularly with the pollens. This is done by placing a tiny speck of the dry pollen on the conjunctival mucosa. A positive response will consist of itching, watering, injection and edema of the mucosa. If the cause can be determined, treatment should be begun as in hay fever. If it is a food it may be possible to avoid it.

If pollen is found to be the cause, or if no cause is found, it is possible that a residence at high altitudes may relieve the condition. Axenfeld refers to that likelihood. Ernst Fuchs (Textbook of Ophthalmology, ed. 5, Philadelphia, J. B. Lippincott Company, 1917) names a residence in the mountains as one of the methods of treatment. Data are not present which would indicate the superiority of one mountain chain over another. The higher elevations, being comparatively free from vegetation, are probably the most favorable.

ANGIONEUROTIC EDEMA

To the Editor:—A woman, aged 42, with irrelevant past personal history, whose mother had asthma and whose sister was sensitive to horse-hair, had attacks of angioneurotic edema while in Florida fourteen months before. The attacks occurred every twenty-eight days, lasted four or five days, and covered the entire face, neck, arms and legs. The menopause began in 1927 and she continues to have severe hot flashes between attacks, which disappear when allergic manifestations are shown. She has been tested for proteins, foods, bacteria and various animals, and is negative to all. Physical examination is negative and gynecologically she is negative. Is it possible that this allergy is due to ovarian hormones or to the menopause? Treatment with calcium lactate and ephedrine sulphate was without value. I cannot find reference in literature to an angioneurotic edema of menopausal or endocrine origin. Please suggest a line of treatment and any possible tests of hormones for sensitivity. Edema is so intense that I am afraid the patient will die from laryngeal obstruction. Do not mention name, please.

M.D., Pennsylvania.

ANSWER.—Although angioneurotic edema need not necessarily be allergic, it frequently is of the latter type. In this particular case, because of the definite history of allergic manifestations in the family, an allergic cause may be suspected. It is recognized that menstruation or the menopause may be the precipitating

factor of attacks of urticaria, asthma and similar manifestations, while the more basic cause may be a sensitization to food or an inhalant. Allergy to ovarian hormones, while not impossible, is less likely.

If complete tests for food and other materials have been made, the following suggestions are offered:

1. The patient should be placed on an elimination diet with a view of determining sensitization to foods that do not react on skin tests. The diet chosen should contain only a few foods and those which do not frequently cause allergy. Such foods as apricots, pineapple, prune, spinach, lettuce, beef, lamb, rice and olive may form the diet for the first few days. If the patient improves on such a diet, new food may be added every three or four days.

2. If no response is obtained from dietary measures, treatment with ovarian hormone may be indicated.

3. For more temporary measures from 4 to 8 units of parathyroid extract subcutaneously, every two days, may be useful. In some cases one-half drachm (2 cc.) doses of dilute hydrochloric acid in one or one and one-half glasses of water taken with meals may be of value.

4. In the event of failure to obtain results from these methods, recourse may be had to the use of nonspecific measures, such as autohemotherapy or peptone orally or subcutaneously. At times, results may be obtained by these methods when more specific treatment fails.

STRONTIUM BROMIDE IN DERMATITIS VENENATA

To the Editor:—Please advise me as to the efficacy of strontium bromide solutions given as injections in the treatment of dermatitis venenata. I will appreciate any advice as to the most effective treatment of that condition. Please omit name.

M.D., Texas.

ANSWER.—The treatment of dermatitis venenata is dependent largely on the irritant responsible. The oily irritant of poison ivy, for instance, can be removed with soap and hot water, which in an alkali dermatitis would be contraindicated. The range of irritants is nearly as wide as the list of substances with which man comes in contact. For most cases, avoidance of contact and the use of calamine lotion (prepared calamine, 8 parts, and zinc oxide, 8 parts, in solution of calcium hydroxide, 120 parts) is sufficient. To this phenol and glycerin, of each, 0.6, or menthol, 0.6 or 1.2, may be added, or in nonvesicular cases half rose water may be used as a vehicle, or more glycerin may be used. Other forms of dermatitis venenata, as that caused by sulphur, demand ointments.

Only in severe cases, or in nervous individuals, is internal medication necessary. In such cases sedatives are useful and because they are least liable to increase itching or cause complicating eruptions, bromides are the most useful. Strontium bromide is no more effective than the sodium salt, which is the only other one given intravenously. Limitation of sodium chloride intake is an aid to the action of the bromides.

DIAGNOSIS OF ROCKY MOUNTAIN SPOTTED FEVER

To the Editor:—In this county there have been three or four cases diagnosed as Rocky Mountain spotted fever. In two of the cases the county health officer claimed that the diagnosis was confirmed by laboratory methods. The cases have been handled by different physicians and in the case of the second appearance the attending physicians, following the information that the first cases were confirmed by laboratory methods, sent the blood to the laboratory to which the first specimens were sent. The laboratory sent back to the second group of physicians a report of agglutination in certain dilutions for the "Weil-Felix" reaction. In his "Beside Diagnosis," Blumer states that there is no satisfactory laboratory diagnosis (p. 274). The Weil-Felix test is generally considered diagnostic in typhus fever. Has this test been used in the diagnosis of Rocky Mountain spotted fever? By returning reports on these cases, the laboratory in question leaves the impression that this is the case. Is it possible that the laboratory is sending back reports of the Weil-Felix reaction in order to be used in differential diagnosis without so stating? Please omit name.

M.D., North Carolina.

ANSWER.—The Weil-Felix test, that is, the agglutination of *Bacillus proteus* X, has been found to be positive with serums from cases of either typhus or Rocky Mountain spotted fever. There is some variation in the reaction of typhus serums and Rocky Mountain spotted fever serums with different strains of *B. proteus* X. This variation has not been fully investigated as yet. With the strains of *B. proteus* X usually employed in diagnostic laboratories in this country, no differentiation between typhus and spotted fever can be made. The exact differentiation between typhus and spotted fever in the laboratory requires a rather prolonged study in animals of the nature of the virus recovered from the patient's blood. This study should include: (1) the clinical picture produced by the virus in guinea-pigs; (2) the production of agglutinins for *B. proteus* X in rabbits or monkeys; (3) histologic lesions produced

in the tissues of animals, and (4) cross immunity tests with known strains of typhus and spotted fever. Protection tests to determine the ability of convalescent serum to protect animals against infection with spotted fever are of value.

VITILIGO

To the Editor:—I have a patient, a girl, aged 18, single, of medium build, weighing 118 pounds (53.5 Kg.), who had whooping cough at the age of 7, measles at the age of 6 and who is otherwise healthy. About three years ago she noticed a place on the right anterior surface of the throat turning white; the skin became depigmented to the extent of 3 inches in length and half an inch wide. During the last year this area has increased in size, radiating up the side of the neck toward the mastoid prominence. There is now a perceptible bulging of the skin over the depigmented area. To the touch it feels like a fatty tumor but perhaps somewhat harder and is more or less fixed to the superficial structures but not deeply fixed. Can you tell me what to do for this condition? I am at a loss to know what it is called. I might add that there is no breaking down of the integument so far, and no pain or itching. Please omit name.

M.D., West Virginia.

ANSWER.—The increasing loss of pigment described corresponds to the condition known as vitiligo. This is nearly always acquired. The white spots begin as single or multiple defects which tend to coalesce. Sometimes they present a regular convex border and sometimes the margin may be irregular. The etiology is not known. Disturbances in the glands of internal secretion, arteriosclerosis and nervous disturbances have been observed as associated conditions in these cases. In the course of time these depigmented areas may increase in size and number, though, on the other hand, they may tend to disappear or to remain stationary. The query states that there is a perceptible bulging of the skin over the depigmented area and that the region is somewhat harder. One may assume that this bulging may be produced by atrophy and thinning of the integument, diminishing the elasticity, which may occur during the course of vitiligo.

The only treatment consists in attempting to change the color of the skin, which may be attempted with the use of a quartz lamp; or the depigmented area may be colored with cosmetics.

WHISKY AND CATARACT

To the Editor:—A man, aged about 70, who has been a teetotaler all his life, has during the last year or so imbibed whisky at irregular intervals (sometimes going days, or even weeks, without touching any) for stimulation and to produce sleep. These sleep drafts have not been large but have been taken usually on an empty stomach after midnight. He is told by an ophthalmologist that he has swollen lenses and cataractous deposits, which made his left eye myopic to 6 diopters. There has been little change in that eye during the last year or two but the right eye is becoming rapidly myopic and has risen from 4 diopters to about 5½ in the last six or eight months. Could toxic amblyopia be a factor in this loss of vision, which has been so rapid in the right eye? At times it has seemed that after the man has taken one of these drinks the vision has been somewhat reduced the next day, but the myopia is increasing so rapidly that it is impossible to state that this is a fact. The whisky used has been the best that could be had through drug stores and by physician's special supply. Please omit name.

M.D., Louisiana.

ANSWER.—It is improbable that the whisky has played any part in the ocular condition. The development of cataract is usually associated with an increase in myopia of some 1 to 3 diopters. As cataract formation is practically always binocular, it is only fair to assume that the increase in the myopia in the right eye is due to the gradual formation of lens opacities. Much can be attributed to whisky, but not this.

IDIOSYNCRASY TO QUININE

To the Editor:—During the past year I have had two cases of subtertian malaria in which generalized urticaria and swelling of the face developed on the second day of quinine therapy. Neither showed any alarming signs other than the eruption. There was no dyspnea, deafness, photophobia, arrhythmia, delirium or albuminuria. Each patient was getting three doses of 0.6 Gm. of quinine daily. The dosage was decreased to 0.3 Gm. five times daily at four hour intervals. The eruption disappeared in the following twenty-four hours. During this time the temperature came down to normal and stayed down. Further convalescence was uneventful. Quinine was continued daily for six weeks. Is this eruption due to an idiosyncrasy to the quinine or is it from the malaria? Is it dangerous to persist with the quinine? Please omit name.

M.D., Virgin Islands.

ANSWER.—Although allergic symptoms have been described as a result of malarial infection, the present symptoms were probably the result of an idiosyncrasy to quinine. A discussion of this subject may be found in Stitt's "Diagnosis and Treatment of Tropical Diseases," 1922. To test quinine idiosyncrasy he advises a cutaneous test by scarifying the flexor surface of the arm with a 1 in 10 solution of quinine free from acid, controlled by a similar test with normal serum. In positive

patients, marked erythema and edema occur in about five minutes. For desensitization he advises 0.006 Gm. of quinine combined with 0.3 Gm. of sodium bicarbonate, followed in about one and one-half hours with 0.06 Gm. of quinine with 0.3 Gm. of sodium bicarbonate. In general, when desensitization occurs it is not dangerous to proceed with quinine. Furthermore, when the symptoms are not alarming and as apparently occurred in the cases reported, desensitization or tolerance automatically occurs during therapy.

PROPHYLACTIC USE OF ARSPHENAMINE

To the Editor:—A patient was exposed several times to active secondary syphilis within the past four or five weeks before the syphilitic condition of the partner was diagnosed. At present there are no signs or symptoms of any infection, and the blood Wassermann reaction is negative. What would be your advice as to therapeutic measures for the exposed patient? Would you think it justifiable to administer a course of four or five intravenous injections of the proper dose of arsphenamine? Kindly omit name.

M.D., New York.

ANSWER.—A course of prophylactic injections of an arsphenamine, as suggested, is perfectly justifiable. It entails, however, a long period of careful clinical and serologic observation afterward, for there is no guaranty that, if infection has taken place, such a course will eradicate it entirely. The treatment will no doubt disturb the normal course of the disease, if it does not succeed in curing it; therefore the watch must be more careful and maintained for a much longer time than if the disease is left to develop normally.

Allowing the infection to develop may entail the necessity of a regular course of treatment for early syphilis; but if nothing develops the patient is freed from anxiety much sooner than under the first procedure.

HERPES SIMPLEX ON EXPOSURE TO SUN'S RAYS

To the Editor:—For two seasons I have been observing a young man who develops severe herpes over the external portions of his lips whenever he is exposed to the direct rays of the summer sun for more than an hour or so. This season, difficulties began following a baseball game recently. Last year's attacks followed exposure while fishing or swimming. Previous to last season he had no such attacks. He is in the twenties, is apparently quite well, and complains of no other sensitiveness of skin or mucous membranes. What would you suggest in the way of treatment or prevention? Please omit name.

M.D., New York.

ANSWER.—Herpes simplex, induced by exposure to the sun's rays, is not uncommon. It is difficult to carry out any treatment that will overcome sensitization. An ointment may be used, one that contains a slight coloring material, such as calamine, during the time that one is exposed. Ointment of rose water, hydrous wool fat or other greasy substances alone will probably be sufficiently protective. The following preparation might be of service: crude calamine, 4 Gm.; ointment of rose water, sufficient to make 30 Gm.; for external use.

PARATYPHOID INFECTIONS

To the Editor:—A fully developed case of paratyphoid appeared within twenty-four hours after the ingestion of a salmon sandwich. The attendant physician attributed the attack to the sandwich, stating that the incubation might have progressed in the sandwich. Regardless of the shelf life of sandwiches, could such an attribution be justified? Please omit name.

M.D., District of Columbia.

ANSWER.—Paratyphoid infections may develop suddenly, sometimes within a few hours after eating contaminated food. In the well known Derby outbreak in England, caused by pork pies, the period of incubation (thirty-seven patients) ranged from one and one-half to twenty-one hours. In some cases the illness was severe and lasted for three weeks. In the instance cited in the query it is of course impossible to assert, on the evidence presented, whether the sandwiches were or were not the cause of the illness. In such cases it is necessary to obtain full bacterial and epidemiologic data to justify any opinion.

"HYPERSECRETION DURING PREGNANCY"

To the Editor:—In THE JOURNAL, July 8, page 158, an inquirer asks for a method of treatment for excessive sweating, and except for general measures you have nothing specific to offer. In treating a case of asthenia secondary to a chronic bacteremia (for which I have been unable to find an underlying primary focus of infection), I have used with symptomatic improvement the recent extract of suprarenal cortex (Eschatin). This patient was much distressed with severe perspiration, frequently being drenched while resting quietly in bed; a dose of 1 cc. of the extract on alternate days has completely controlled this condition, in addition to giving some relief from the asthenia. Eschatin burns sharply when injected, but this can be entirely eliminated by adding 3 drops of 1 per cent procaine hydrochloride (without epinephrine) to the dose in the syringe, allowing the last drop to fill the needle.

J. M. NEIL, M.D., Oakland, Calif.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

- ALASKA: Juneau, Sept. 5. Sec., Dr. Harry C. DeVighne, Juneau.
- AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Boston, Sept. 19. Sec., Dr. Wm. H. Wilder, 122 S. Michigan Ave., Chicago.
- AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY: *Written*. Boston, Chicago, Cleveland, New York, Philadelphia, St. Louis and San Francisco, Oct. 28. Oral. New York, Dec. 15-16. Application must be filed before Sept. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.
- AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B Candidates)*. The examinations will be held in various cities of the United States and Canada, Dec. 9. Application necessary before Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.
- AMERICAN BOARD OF OTOLARYNGOLOGY: Boston, Sept. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.
- COLORADO: Denver, Oct. 3. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.
- CONNECTICUT: *Basic Science*. New Haven, Oct. 14. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven.
- GEORGIA: Atlanta, Oct. 10. Joint Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.
- IDAHO: Boise, Oct. 3. Dir., Mr. F. L. Cruikshank, Boise.
- IOWA: Des Moines, Sept. 12-14. Dir., Mr. H. W. Grefe, Capitol Bldg., Des Moines.
- MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. J. E. McIntyre, 202-3-4 Hollister Bldg., Lansing.
- MINNESOTA: *Basic Science*. Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.
- MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.
- NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. The examinations will be held at centers where there are five or more candidates, Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.
- NEBRASKA: *Basic Science*. Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.
- NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Dr. Charles Duncan, State House, Concord.
- NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.
- NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.
- OKLAHOMA: Oklahoma City, Sept. 12-13. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.
- PUERTO RICO: San Juan, Sept. 5. Sec., Dr. O. Costa Mandry, Box 536, San Juan.
- RHODE ISLAND: Providence, Oct. 5-6. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.
- TENNESSEE: Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.
- WISCONSIN: *Basic Science*. Madison, Sept. 23. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Kansas June Report

Dr. C. H. Ewing, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held in Kansas City, June 20-21, 1933. The examination covered 10 subjects and included 70 questions. An average of 75 per cent was required to pass. Seventy candidates were examined, all of whom passed. Fifteen physicians were licensed by reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine.....	(1933)		86.4
Northwestern University Medical School.....	(1933)		87.1, 88.9
University of Kansas School of Medicine.....	(1929)		84.2,
(1933) 82.1, 83, 83.2, 83.5, 83.8, 84.1, 84.5, 84.8, 85.1,			85.4, 85.4, 85.5, 85.5, 85.6, 85.6, 85.7, 85.8, 85.8, 85.8,
85.9, 86.1, 86.1, 86.3, 86.5, 86.7, 86.8, 87, 87.1, 87.3,			87.4, 87.5, 87.7, 87.7, 87.8, 87.8, 87.9, 88, 88.3, 88.8,
89.1, 89.2, 89.3, 89.3, 89.5, 89.9, 90, 90.1, 90.1, 90.6,			90.8, 91.5
Harvard University Medical School.....	(1931)		88
St. Louis University School of Medicine.....	(1932)		86.9
Washington University School of Med.....	(1931) 86.1, (1933)		89.6
Creighton University School of Medicine.....	(1933) 85.2, 86.2,		87.6
University of Nebraska College of Medicine.....	(1931)		88.3,
(1932) 88.3, (1933) 85.5			
Ohio State University College of Medicine.....	(1931)		87.4
Temple University School of Medicine.....	(1932)		89.4
Meharry Medical College.....	(1933)		88.3, 88.4
University of Wisconsin Medical School.....	(1932)		85.7
College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine.....	(1929)		New Jersey
Loyola University School of Medicine.....	(1917)		Illinois
State University of Iowa College of Medicine.....	(1902), (1930)		Iowa
University of Louisville School of Medicine.....	(1928)		Kentucky
University of Michigan Medical School.....	(1928)		Michigan
St. Louis University School of Medicine.....	(1904)		Illinois,
(1914), (1928) Missouri			
Washington University School of Medicine.....	(1928)		Missouri

Western Reserve University School of Medicine.....	(1931)	Ohio
University of Oklahoma School of Medicine.....	(1932)	Oklahoma
Woman's Medical College of		Ohio
Baylor University College of		Texas
University of Toronto Faculty		Iowa

Nevada Reciprocity Report

Dr. Edward E. Hamer, secretary, Nevada State Board of Medical Examiners, reports three physicians licensed by reciprocity, May 1, 1933. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists.....	(1923)		California
University of California Medical School.....	(1922)		California
State University of Iowa College of Medicine.....	(1930)		Iowa

New Mexico Endorsement Report

Dr. P. G. Cornish, Jr., secretary, New Mexico Board of Medical Examiners, reports 7 physicians licensed by endorsement, April 10, 1933. The following colleges were represented:

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Illinois College of Medicine.....	(1929)		Illinois
Indiana University School of Medicine.....	(1928)		Indiana
College of Physicians and Surgeons of Baltimore.....	(1908)		Maryland
Kansas City Medical College, Missouri.....	(1896)		Kansas
St. Louis University School of Medicine.....	(1928)		Illinois
Baylor University College of Medicine.....	(1932)		Texas
Southwestern University Medical College, Texas.....	(1905)		Texas

Book Notices

Annual Review of Biochemistry. Edited by James Murray Luck. Volume II. Cloth. Price, \$5. Pp. 564. Stanford University, California: Stanford University Press, 1933.

This volume compares favorably with its predecessor of 1932 with respect to the competence of the reviewers and the execution of the difficult task of evaluating literally thousands of research contributions in a single branch of the preclinical sciences. Almost three thousand papers in twenty-five different fields of biochemistry have been reviewed, and these are stated to represent "less than half of the papers of sufficient merit and weight to deserve treatment." It appears that about three new papers on vitamins alone appear each day. These circumstances explain, as almost no other statement can with equal force, why scientific workers and students of medicine need "reviews."

Few of the chapters are written in a style and from an angle that would make them "agreeable reading" to any except tutored investigators. The reports are too objective and specific in content to intrigue the "general reader." To the specialist they supply timely information and, in many instances, worth while criticism that will save him many hours and direct him to unexpected sources of desired information. A few quotations selected at random may illustrate some of the many newer contributions with the explanation of which the book is replete:

The problem of the structure of the known di- and trisaccharides has been practically solved, and the past year brought evidence in confirmation of the earlier conclusions reached through the method of synthesis.—p. 31.

Considerable work indicating that certain of the enzymes and other products of biological importance are protein in nature has been done.—p. 83.

All recent work confirms the fundamental observations of Epstein on hypoalbuminemia as the causal agent of nephrotic edema.—p. 181.

Whether the creatinine-yielding material is the precursor of urinary creatinine is not known. It appears to be distributed about equally between the corpuscles and the plasma. Gaebler's findings are in accord with the earlier observations of Behre and Benedict, who expressed the view that preformed creatinine is not present in blood in detectable quantities.—p. 189.

The discovery of phosphocreatine and its functions appears to justify the belief, held by some for many years, that creatine is an anabolic product which serves as an indispensable component of the muscle cell, and is not a catabolic end-product derived from a certain type of protein metabolism.—p. 198.

While all of the steps are not yet entirely clear, it seems that in the normal muscle the first change, and the one which is primarily responsible for the contraction, is the breakdown of phosphocreatine into its components.—p. 199.

An outstanding study has demonstrated that magnesium is essential to life.—p. 220.

The isolation of acetylcholine from skeletal muscle and heart muscle beautifully substantiates many previous assumptions. Acetylcholine has

long been considered as the *vagusstoff*, the substance which is liberated by the stimulated vagus in the effector organs and which produces the nerve's effects. It is supposed to be the chemical factor whose presence is responsible for producing and maintaining the tonic contraction of skeletal muscle.—p. 321.

The transmission of vitamin A from mammalian parent to fetus has been found by Dann to occur in colostrum and milk rather than through the placenta.—p. 345.

The international character of scientific endeavor and the "brotherhood of men of science" is shown by the geographic distribution of the thirty-two reviewers, who represent eight different countries.

Ergebnisse der medizinischen Strahlenforschung: Röntgendiagnostik, Röntgen-, Radium- und Lichttherapie. Herausgegeben von H. Holfelder, H. Holfhusen, O. Jüngling, H. Martius und H. R. Schinz. Band VI. Paper. Price, 72 marks. Pp. 666, with 469 illustrations. Leipzig: Georg Thieme, 1933.

The first chapter of this compilatory periodical is devoted to the investigation of the connection between the skin erythema and the therapeutic x-rays. As a goal of this investigation is laid down the attempt at establishing the correlation between changes in the energy of these rays and the physical doses. For this purpose, testing of the human skin was used.

The wealth of information offered seems to support the expectation of the authors that in this way quite a few as yet doubtful biologic problems may be solved. Von Pannewitz reports the experiences on roentgen therapy of arthritis deformans collected at the Freiburg clinic. In summing up his elaborate reports on diagnosis, technic of treatment and results, he feels justified in recommending this method as the method of choice for the treatment of arthritis deformans. Brauer and Kuchenmeister furnish a detailed survey of the technic and diagnostic possibilities of the roentgenology of the peripheral blood vessels. Schumacher's chapter deals with the roentgen diagnosis in all phases of pregnancy and roentgen observations in the new-born. The authors in conclusion state that roentgen examination furnishes observations only and not a complete diagnosis, which can be built up only by the application of thorough knowledge of the physiologic and pathologic details to the shadowgraphs. Under such conditions the author considers roentgenography an indispensable aid to the obstetrician. Velde reports the roentgenographic changes as found in the gastric mucosa in response to vegetative excitations in achylia gastrica and pernicious anemia. Having, in his monograph on roentgenology of the pancreas, asserts that, though he appreciates the difficulties of visualizing this gland in the shadowgraph, many important diagnostic details may be obtained if one compounds all the symptoms and the spatial and topographic details. Teschendorf gives a complete survey of the roentgenologic manifestations demonstrating the sequelae accruing from pyloric and prepyloric ulcers. Bayer and Pansdorf discuss the roentgenologic diagnosis of diverticula within the alimentary tract and emphasize its clinical dignity. Zuppinger devotes his section to an elaborate discussion of the pathology and therapy of intra-oral malignant tumors, summing up the pertinent experiences collected at the Zurich surgical clinic. Modern radiotherapy, electrocoagulation and the traditional surgical methods are discussed and weighed as to their efficiency. The author calls attention to the fact that statistics are unreliable unless collected under the principles laid down by Winter. All the monographs contained in this volume excel by the multitude of high grade illustrations and a complete index of the world's literature connected with each topic.

Psycho-Analysis Today: Its Scope and Function. Edited by Sándor Lorand, M.D. Cloth. Price, \$4.25. Pp. 370. New York: Coriel-Friede, 1933.

This represents a collection of papers meant to orient the reader analytically in those fields which psychoanalysis has penetrated. One receives an impressive picture of how many fields have been richly fertilized by psychoanalysis within the forty years of its existence. It is somewhat difficult to say what audience the book is intended to reach. The introduction mentions general practitioners, psychiatrists, analysts, educators and psychologically interested lay people. But this endeavor to reach such a variety of groups makes the book uneven. There are some excellent popular papers, such as Ferenczi's "History and the Fundamental Concepts of Psychoanalysis," Monroe Meyer's "Dream Interpretation," Brill's "Development of Instinct Life," and the papers of Obendorf, Ames and

Broadwin on educational problems. These papers do not presuppose any psychoanalytic knowledge and could serve as an excellent introduction. There are other papers, such as that of Nunberg on psychoanalytic therapy, which so exclusively operate with theoretical assumptions that the factual material is quite lost sight of. This can only be bewildering, particularly as there are no distinct statements as to what is hypothesis and what is fact. A satisfying contrast to papers of this sort are the articles of Gardiner and Lewin on hysteria and obsessional neuroses, which are built on much illuminating factual material. The papers on the psychoses, though some of them are brilliantly written, as that of Zilboorg on the manic-depressive psychoses, show not only the amazing extent to which psychiatric understanding of the psychoses has already been enriched but also the vast amount of work that is still to be done. There are two directions in which one is justified in expecting that this work will contribute to the advancement of psychiatry. First, the utilization of better understanding for a better therapy. Only preliminary attempts have been made thus far. Second, the organization of recent knowledge in order to understand in a much deeper way the contents and effective mechanisms of the different forms of psychoses. This, as these papers show, has not yet been accomplished. What is still missing is insight into the dynamics that brings about a psychosis. The answer that in psychoses a deeper regression takes place than in neuroses is not fully satisfactory, because one still wants to know which factors originate and determine such a regressive process.

Entstehung, Erkennung und Behandlung innerer Krankheiten. Von Dr. Ludolf Krehl, Professor in Heidelberg. Band III: Die Behandlung innerer Krankheiten. Von Dr. Ludolf Krehl. Paper. Price, 18 marks. Pp. 289. Berlin: F. C. W. Vogel, 1933.

This treatise on the practice of medicine is now complete. The final volume, like the first two, has its own table of contents and index. In reviews of the first volumes (THE JOURNAL, June 27, 1931, p. 2230; June 18, 1932, p. 2234; Sept. 3, 1932, p. 853, and Sept. 10, 1932, p. 940), attention was called to the amazing departure by Krehl from the customary organization of similar textbooks. As a rule they begin with one or more chapters on infectious diseases, and then the diseases of separate organs or organ systems, such as the respiratory organs and the alimentary canal, are described. Each disease is dealt with separately, all its phases being portrayed in a single account. In addition to such familiar textbooks there are many others devoted solely to diagnosis, pathology or therapy, but they are rarely portions of a complete work on internal medicine; when they are parts of some system, they are usually the work of different writers. Consequently it seems appropriate to emphasize again the unique character of Krehl's ambition and of its realization.

It is natural to suppose that his plan was largely shaped when he was a young man by the success of his *Grundriss der allgemeinen Pathologie*, published in 1893, and of its many subsequent revisions, entitled *Pathologische Physiologie*. One of the English translations of this popular book bore the title "The Basis of Symptoms." It now forms the center piece of this three volume "Practice." Apparently Krehl's bent for the general as opposed to the particular became keener with the passing years. In the preface to this *Behandlung* he refers to his dream of half a lifetime of discussing treatment from the standpoint of its general principles. In the first volume, devoted to etiology, and in the second, devoted to diagnosis, he was successful in presenting matters so that the reader's attention and interest in essentials is steadily maintained. His hope to discuss therapy in a similar manner he bluntly confesses has not been realized; his disappointment is outspoken. He found he was compelled to treat therapy as an entity. It could not be dealt with solely on the basis of its scientific association with pathologic physiology, because the physician is bound to employ all measures that will benefit his patient. Therefore he says that this book has been written mainly to interest beginners in practice. His lament, however, is not altogether justified, because his well rooted habit of dealing broadly with fundamentals is conspicuous throughout the work.

The first third of the volume is occupied by short chapters on varieties of therapy, methods of improving health of the body as a whole, nutrition, physical and mental therapy, the use of drugs, treatment of infections and of fever, and how to

plan treatment. These are followed by chapters on the treatment of gout and diabetes, allergistic conditions, diseases of glands with internal secretions, diseases of the nervous system, and diseases of the blood and circulatory organs, the alimentary canal, respiratory organs, bones, joints and urinary organs.

Krehl vigorously advocates eradication of foci of infection that menace other parts of the body or cause systemic disease. He recognizes the dangers of roentgen or other radiation for deeply placed lesions. On the whole, he is opposed to intravenous medication. Valuable suggestions are made pertaining to relations between the internist and the surgeon and their conferences about operations. Unfortunately, many of the drugs recommended possess names suggesting patented or proprietary remedies used chiefly in Germany. There are no signs of calculated reticence in the author's counsels. The reader's confidence is won by his frank acknowledgments of ignorance no less than by confident statements of the value or worthlessness of certain forms of treatment. His authority to prescribe is also reflected in innumerable suggestions regarding management of unusual symptoms and complications. The medical profession should be extremely gratified with the completion of this expression of the long experience of a renowned clinician.

Lincoln and the Doctors: A Medical Narrative of the Life of Abraham Lincoln. By Milton H. Shutes, M.D. Boards. Price, \$5. Pp. 152, with portraits. New York: Pioneer Press, 1933.

In this, Dr. Shutes has with faithful enthusiasm given all that could be said on the subject of Lincoln in his relation to doctors. It is a subject which he has evidently followed with patience until he has collected every available scrap of information. It is an excellent illustration of microscopic attention that has been given to every possible phase of the life of Lincoln. It is attractively written and contains much incidental information about Lincoln. It shows Lincoln in his usual amiable, friendly relations with numerous men but gives no new sidelight in that respect on his character. He had many doctors among his associates, but their acquaintance was casual and incidental and involved no episodes that are important medically or historically. It is not like delving into old Ben Franklin, for example, and his association with medicine. He introduced bifocal glasses, established hospitals and gave wise advice on how to avoid taking cold and really is entitled to a place of considerable importance in medical history. Lincoln knew the doctors of his communities, liked them as he liked most men, consulted them when he had a belly-ache or a bad cold. Like all intelligent books about Lincoln, this will be read with interest. It is the sort of book on which one can spend a few hours with pleasure. Most of the material appeared serially in *Hygeia*.

Clinique médicale des enfants: Maladies infectieuses, rhumatisme articulaire aigu, fièvre typhoïde, scarlatine. Par P. Nobécourt, professeur de clinique médicale des enfants à la Faculté de médecine de Paris. Paper. Price, 55 francs. Pp. 420, with 151 illustrations. Paris: Masson & Cie, 1932.

This excellent collection of lectures on acute articular rheumatism, typhoid and scarlatina in infancy and childhood is the ninth of a series of similar volumes, which have appeared sporadically since 1914, discussing the clinical aspects of various diseases and their peculiarities in early life. The first eight lectures, comprising 179 pages, are devoted to the subject of acute articular rheumatism, which the author prefers to designate Bouillaud's disease. He considers rheumatism a disease which may be located in various parts of the body, as well as in the joints, and which after an acute onset gradually becomes chronic. The extra-articular manifestations—the cardiopathies, cervical and cervicosciatic rheumatism, pulmonary and abdominal rheumatic disorders—are discussed in detail and illustrated by clinical cases. Two chapters are devoted to pancarditis and one to a consideration of rheumatic aortitis. Typhoid and paratyphoid infections are thoroughly covered in ten lectures, special stress being laid on the onset, the complications and the peculiarities of these infections in early life. The author states that typhoid and paratyphoid are not of rare occurrence, although not encountered as frequently as years ago. Scarlet fever is not considered at length, since many of the complications have been discussed in earlier volumes. One lecture is devoted to scarlatinal arthritis and one to scarlatinal adenitis. The book is intended to be a practical clinical guide, and the intention is well carried out.

Wheat, Egg or Milk Free Diets with Recipes and Food Lists. By Ray M. Balyeat, M.A., M.D., F.A.C.P., Associate Professor of Medicine and Lecturer on Diseases Due to Allergy, University of Oklahoma Medical School. Assisted by Elmer M. Rusten, M.B., M.D., Chief of Section, Dermatology, of Balyeat Hay Fever & Asthma Clinic, Oklahoma City, and Ralph Bowen, B.A., M.D., Chief of Section, Pediatrics, of Balyeat Hay Fever & Asthma Clinic, Oklahoma City. Cloth. Price, \$2.50. Pp. 149 with illustrations. Philadelphia & London: J. B. Lippincott Company, 1933.

This little volume deals mainly with diets and recipes for patients who are sensitive to wheat, egg or milk or to combinations of these foods. It also contains a few introductory remarks about some of the allergic diseases that may be due to foods. Since many allergic individuals are food sensitive and since egg, wheat and milk are the most common offenders, any information that deals with the details of such diets is of distinct aid to the physician and the sufferer. Apparently this book is intended for both the patient and the physician. One wonders, however, at the advisability of furnishing an egg-sensitive patient, for example, with a book that contains not only diets and recipes for those who are sensitive to egg but also recipes without wheat, without milk, without wheat or milk, without egg or milk, without wheat or egg and without wheat, egg or milk. It would seem that the book would be more suitable for the physician, who may select the necessary diet for the patient and furnish him with a copy of it. The statement that 20 per cent of the population suffer with asthma, hay fever and similar disorders cannot be accepted without challenge. This monograph should fulfil a definite need in the hands of the allergist, the internist, the general practitioner, the dietitian, and all others on whom may fall the tedious duty of preparing diets for patients who are sensitive to these foods.

The Early History of the Infant Welfare Movement. By G. F. McCleary, M.D., D.P.H., Medical Officer of Health, Battersea, Hampstead, Bedfordshire. Cloth. Price, 6s. Pp. 176, with 6 portraits. London: H. K. Lewis & Company, Ltd., 1933.

This little book is more than a history; it is an appreciation of the pioneers in the infant welfare movement who rescued childhood from industrial exploitation, from neglect due to ignorance or indifference, and from the devastating attacks of preventable disease. As might be expected, it deals particularly with the history of child welfare in England; but it does not fail to note progress in other countries and how such progress influenced the British movement. The author seems particularly impressed with the Strauss milk charities in New York at the beginning of the last decade of the nineteenth century. He devotes a considerable part of his chapter on early infant welfare work in America to these milk depots. The early recognition of the importance of breast feeding is emphasized, a principle lately returned to, somewhat belatedly, after an era of overemphasis on artificial feeding. The controversy over pasteurization versus inspection, to insure the purity of milk, is reviewed, as is the early history and origin of medical milk commissions for the supervision of production of certified milk. The book is founded on specific documentary authority, well written, well made and well indexed. Public health workers ought to read it, especially if they are new workers, if only to find out that progress toward better infant health is based on deeper and more significant community changes than the mere establishment of baby clinics, though these have their proper place. Physicians will be happy to read the record of contributions to the infant welfare movement in its early years made by the medical profession and ought to wonder why leadership in this field has, in many localities at least, passed into lay hands.

The Vitamins in Health and Disease. By Barnett Sure, Ph.D., Professor of Agricultural Chemistry, University of Arkansas, Fayetteville, Arkansas. Cloth. Price, \$2. Pp. 206. Baltimore: Williams & Wilkins Company, 1933.

This is an interesting summary, in nontechnical language understandable to the general reader, of information concerning the effect on health of insufficiency of vitamins in the diet. The properties of the vitamins, chemical operations for their isolation and identification, their distribution in natural and prepared foods which are already adequately described in other works on vitamins are either omitted or but lightly touched on. Problems requiring study on the effect of vitamin deficiency on health are defined so far as permitted by present knowledge; the book,

therefore, is an aid to future research. Emphasis is placed on the application of data already accumulated for improvement of public health by adequate vitamin intake. Clinical evidence is presented on the effect of vitamins on milk secretion, infant nutrition, growth, appetite and the teeth. The selection of foods for maximum vitamin content in the general diet, and the vitamin diet during pregnancy, the nursing period and the first year of life are prominently discussed. The book should be a valuable textbook for nutrition courses in colleges, for dietitians and nurses, for assisting housewives in planning the daily menu, and for patients requiring dietary instruction.

Le nystagmus vestibulaire et les réactions de mouvements. Par R. Claoué, professeur libre d'oto-rhino-laryngologie, Bordeaux. Publié en 1918. Réimpression en 1933. Paper. Pp. 64, with 19 illustrations. Paris: Norbert Maloine, 1933.

This is a new edition of a work first brought out by Claoué in 1918 and now revised by his son. It is really a "multum in parvo" and gives a clear exposition of vestibular nystagmus and the various ways of stimulating the labyrinth. The text is well arranged, the style is clear, the subject matter is considered in a logical manner, and the illustrations are relatively numerous. This little monograph is especially to be recommended to those who have not yet had a great deal of experience with doing the vestibular tests, for here the whole subject is taken up in a concise, clear style, obviating the necessity of consulting larger works, especially with reference to the fundamental principles of the examination of the vestibular apparatus.

A New Approach to Dietetic Therapy in Epilepsy, Eclampsia of Pregnancy and Infancy, Migraine, Angina Pectoris, Bronchial Asthma, Allergic Diseases, Gout, Essential Hypertension, Pernicious Anemia, Polycythemia, Acne Vulgaris, Nervous and Psychic Disturbances, Constitutional Changes, Aging, etc. Metabolism of Water and Minerals and Its Disturbances. By Eugene Földes, M.D., Cloth. Price, \$5. Pp. 434, with 14 charts. Boston: Richard G. Badger, 1933.

In a book of this nature, which deals with the concepts greatly opposed to the usual therapeutic-dietetic procedures, the reader is confronted with the difficulty of weighing evidence. Any one who has ever attempted therapeutic experiments, especially those involving diet, has realized the difficulties of interpreting results. Probably to appraise the importance of the present contribution would require a set of control experiments. Since this is obviously impossible all one can say is that the book reads like an interesting story but naturally causes a certain feeling of doubt. It is somewhat difficult to conceive that the changes in salt and water metabolism have such a marked influence on such varying diseases as epilepsy, angina, gout, essential hypertension and acne vulgaris. The only way properly to assay the value of this book would be by the experimental method.

Der Stoffaustausch zwischen Mutter und Frucht durch die Placenta. Von H. Schlossmann, Privatdozent am Pharmakologischen Institut der Medizinischen Akademie Düsseldorf. Erweiterte Sonderausgabe des gleichnamigen Beitrages in *Ergebnisse der Physiologie*, Band 34. Paper. Price, 6.60 marks. Pp. 73, with 8 illustrations. Munich: J. F. Bergmann, 1933.

The extent of the work that has been done on the metabolic exchanges between mother and fetus through the placenta is probably appreciated by relatively few, even among obstetricians, physiologists and pharmacologists. Mayer, in 1817, gave the first definite proof of the transmission of a substance through the placenta. This substance was potassium ferrocyanide. Since that time, most of the substances known to occur in the normal metabolism, as well as many drugs and poisons, have been examined. The size of the molecule is likely to be the determining factor; e. g., protein derivatives larger than amino acids are in general refused transmission, as are colloidal dyes such as trypan blue and congo red. Schlossmann's able monograph provides not only a key to all these observations, but also a critical evaluation of the experimental methods employed and the theories that have been advanced. The contents include: morphology of the placenta, paths of exchange between mother and fetus, metabolism of the placenta itself, responses of the vessels of placenta and umbilical cord to stimuli, experimental methods; gaseous exchange between mother and fetus, oxygen consumption of the fetus; transmission through the placenta of carbohydrates, proteins, lipoids, fats, hormones, vitamins, salts, other physiologic substances and foreign substances. The

comparative physiology of the subject is discussed and the view taken that the degree of development of the placenta in no way influences the mechanism of transmission of substances. The higher types of placentas with their fewer layers seem to be permeable to larger molecules (as shown in the table in Needham's *Chemical Embryology*). The author's main contention—one which has long been championed by Slemmons in this country—is that transmission in either direction is only by simple physical processes, such as diffusion; there are no grounds for the vitalistic claims often made. The subject appears to be thoroughly reviewed up to the present year and certainly no more valuable treatise covers the field of placental transfer.

Medicolegal

Practice of Naprapathy Enjoined; Naprapathy Explained.—The state of Iowa filed a petition to enjoin the defendant from practicing medicine and surgery in Iowa. The trial court dismissed the petition, and the petitioner appealed to the Supreme Court of the state.

The defendant conceded that he practiced the healing art. He contended, however, that because he practiced naprapathy and used neither medicines nor surgery, he did not practice or claim to practice medicine or surgery, within the meaning of the medical practice act of the state. In explanation of naprapathy, he testified:

Our theory is that disease originates in the baser tissues of the body, such as connective tissue, especially white fibrous connective tissue, which binds and holds the bones forming the joints of the body together. And if they are in any way injured they are prone, as connective tissue always is, to thicken and shrink. And our theory is that a stretching of the tight connective tissue structures is essential in the restoration of the normal function in the organs supplied by the nerves involved in the tightening of the tissues. And that makes the essential difference, thus, between a chiropractor and a naprapath. It would bind the vertebra closer together, and it would create a condition the opposite of a partial subluxation or displacement, so that two vertebra would be more difficult to displace one from the other in this abnormal tightened condition than it would if it were normal. There would be a restricted movement.

One Oakley Smith, described in the record as the discoverer of naprapathy, testified for the defendant as follows:

Naprapathy is a non-medical science or profession, based on three elements. One: discovery. The discovery that shrunken connective tissues or ligaments produce a great variety of remote ailments. Second element is invention; the invention of a method by which manipulation or exercise or motions could be symbolized in record form. And one inheritance. The same as when one might inherit money from his parents and didn't earn it. . . . In the broad sense of physical education chiropractic [sic] and the non-medical part of osteopathy and Swedish movement, all belong to the non-medical and non-surgical field. From thereon there are definite technical differences, such as those described by Doctor Howard, that instead of the subluxation or bone out of place the naprapath has discovered by means of laboratory instruments and precision it was a case of shrunken ligaments damaging the nerve, rather than bone damage. That made a difference in the shortening up of the number of treatments required, and, increasing the surety of cure. In other words, the difference is largely a matter of emphasis. But that same thing might be said regarding the difference between naprapathy and physical education as taught in the University of Iowa, where they treat sprains and strained ligaments and injured joints, curvature of the spine, different kinds of flat foot, weak arches of the foot; there again it is a matter of emphasis. Physical directors do that for pay without a license or any physician or surgeon around. . . . Our school does not teach the healing of human ailments by the administration of drugs. That is outside of our theory. We teach no surgery. Our pupils are taught to treat human ailments by manipulation. . . . I think Kentucky is the only state which has made a provision to permit naprapaths to take an examination where it wouldn't be all farce. That is the opinion of the naprapaths. . . . This is not only a method of treatment of human ailments but I have cured horses. It is not limited to human ailments. It is limited to anything that has a spinal column and joints and ligaments. It is a healing art. . . . Naprapathy is a non-medical healing art. Pupils of our school were admitted to practice in Illinois. They are not now. At one time they were admitted in Indiana, Pennsylvania, California and Oregon, but they are not at the present time. No state at the present time issues licenses to naprapaths except Kentucky.

In *State v. Hughey*, 208 Iowa 842, 226 N. W. 371, said the Supreme Court, medicine was not given nor was surgery practiced, but the defendant, who claimed to diagnose ailments and to treat them by a laying on of hands, was held to have practiced medicine and surgery. The fact that the present defendant, continued the court, uses a system analogous to

osteopathy and chiropractic is not material. If the defendant were a licensed osteopath or chiropractor, a different question would be presented. Since the medical practice act of Iowa gives no recognition to naprapathy, the courts and the administrative officers of the state can give no recognition to it. The system must be deemed only a name and an evasion of the statute.

The defendant maintained an office in one of the principal office buildings of Cedar Rapids. In the directory of the building his name appeared as "Dr. Banner Howard." Admittedly he undertook to diagnose the ailments of his patrons. As a witness, he claimed to have studied "diagnosis." Correct diagnosis is one of the first duties of the qualified physician, but purported [sic] diagnosis is the first resort of the unqualified and the first requisite of a miraculous cure; ailments which an unqualified practitioner professes to discover and to cure are only such as his own diagnosis declares. Because his new system of naprapathy affords him a complete refuge from any critic who does not follow it, the defendant is subject to no check other than his own judgment. It is not a valid defense, said the Supreme Court, for the defendant to show that he is practicing naprapathy.

The defendant argued that the Iowa statute authorizing the proceedings by injunction was unconstitutional. This question, said the court, was adjudicated against the defendant on a former appeal (*State v. Howard* (Iowa), 241 N. W. 682; J. A. M. A. 99:1886 (Nov. 26) 1932).

The judgment of the trial court, dismissing the petition of the State for an injunction, was reversed.—*State v. Howard* (Iowa), 245 N. W. 871.

Workmen's Compensation Acts: Charitable Hospital an Employer Within Meaning of Act.—The courts of Missouri have held that at common law a charitable institution is exempt from liability for its torts. On behalf of the Barnes Hospital, a charitable institution, it was argued that the workmen's compensation act did not alter that rule nor include charitable institutions within the purview of the act; that the purpose of the act is to provide for workmen engaged in business or industry, and that to hold that charitable institutions are liable for compensation under the act would be contrary to established public policy.

Charitable hospitals have been held to be exempt at common law from liability for their torts, said the St. Louis court of appeals, but it does not follow that the legislature cannot create a rule of liability for such institutions. Under the general language of the workmen's compensation act, the hospital and the deceased employee in this case were operating within its provisions when the accident occurred, unless the act had been rejected or the hospital was among the industries specifically excepted from the purview of the act. The hospital made no claim of having rejected the act or of inclusion among the excepted industries. The term "employer," as defined in the act, is comprehensive enough, the court thought, to include charitable institutions, and nothing in the act discloses a legislative intent to limit its application to industries and businesses within the ordinary sense of those words. In framing the act the legislature had many opportunities to exempt charitable institutions from its operation. The fact that no exemption was made warrants the assumption that the legislature intended to bring such institutions within the purview of the act. The judgment of the circuit court, holding that the Barnes Hospital is within the purview of the workmen's compensation act of Missouri, was affirmed.—*Hope v. Barnes Hospital* (Mo.), 55 S. W. (2d) 319.

Workmen's Compensation Acts: Typhoid Fever Not Compensable Under Act but by Suit at Law.—Mills, in the course of his employment, contracted typhoid fever by drinking contaminated water furnished by his employer. He sued for damages. His employer filed an answer, contending that Mills should make his claim under the workmen's compensation act and that the court was without jurisdiction. A demurrer interposed by Mills, denying the sufficiency of the answer, was overruled by the trial court, and Mills then appealed to the Court of Appeals of Kentucky.

The Kentucky workmen's compensation act defines compensable injuries as "personal injuries sustained by the employee

by accident arising out of and in the course of his employment." It provides specifically "that personal injury by accident as herein defined shall not include diseases except where the disease is a natural and direct result of a traumatic injury by accident." There was no contention in this case that there was a traumatic injury. The disease from which the plaintiff suffered was caused by his taking into his stomach impure drinking water and by the absorption into his system of typhoid bacilli contained in that water. It seems manifest, said the Court of Appeals, that the injury complained of was not compensable within the meaning of the workmen's compensation act. The court below erred in overruling Mills' demurrer and thus sustaining the defendant's answer denying the jurisdiction of the trial court. The judgment of the trial court was therefore reversed and the case remanded. The plaintiff was thus left to his remedy through the courts.—*Mills v. Columbia Gas Const. Co. (Ky.)*, 55 S. W. (2d) 394.

Malpractice: Res Ipsa Loquitur.—The plaintiff was injured when an x-ray machine fell on her face while she was in a dental chair. Her evidence disclosed that the machine was under the exclusive control of the dentist, the defendant in this case, and that if due care had been exercised by him the accident would not have happened. The doctrine of *res ipsa loquitur* applied, in the opinion of the appellate court of Indiana, and the burden of explaining how the accident could have happened consistent with the exercise of due care was cast on the defendant.—*Bence v. Denbo* (Ind.), 183 N. E. 326.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Boston, September 18-22. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Executive Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Lucerne-in-Quebec, Canada, September 11-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.
- American College of Surgeons, Chicago, October 9-13. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
- American Congress of Physical Therapy, Chicago, September 11-15. Dr. F. B. Balmer, 35 East Wacker Drive, Chicago, Secretary.
- American Public Health Association, Indianapolis, October 9-12. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.
- American Roentgen Ray Society, Chicago, September 25-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.
- Associated Anesthetists of the United States and Canada, Chicago, October 8-12. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
- Association of Military Surgeons of the United States, Chicago, September 25-27. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.
- Colorado State Medical Society, Colorado Springs, September 14-16. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.
- Delaware Medical Society of Wilmington, September 26-27. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.
- Idaho State Medical Association, Twin Falls, September 18-19. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.
- Indiana State Medical Association, French Lick, September 25-27. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
- Kansas City Southwest Clinical Society, Kansas City, Mo., October 3-5. Dr. Lewis G. Allen, 601 Minnesota Avenue, Kansas City, Kan., Secretary.
- Kentucky State Medical Association, Murray, September 11-14. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, September 12-14. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.
- Mississippi Valley Conference on Tuberculosis, Kansas City, Mo., October 6. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.
- Nevada State Medical Association, Las Vegas, September 29-30. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.
- New England Surgical Society, Boston, September 29-30. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.
- Northern Minnesota Medical Association, Willmar, September 8-10. Dr. O. O. Larsen, Detroit Lakes, Secretary.
- Ohio State Medical Association, Akron, September 7-8. Mr. Don K. Martin, 131 East State Street, Columbus, Executive Secretary.
- Pennsylvania Medical Society of the State of, Philadelphia, October 2-5. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.
- Southern Minnesota Medical Association, New Ulm, September 25. Dr. M. C. Piper, Mayo Clinic, Rochester, Secretary.
- Utah State Medical Association, Salt Lake City, September 14-16. Dr. L. R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.
- Vermont State Medical Society, Barre, October 5-6. Dr. W. G. Ricker, 31 Main Street, St. Johnsbury, Secretary.
- Washington State Medical Association, Seattle, August 28-30. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

2: 373-412 (April) 1933

Code of Action in Solving Medical Economics. J. R. Garber, Birmingham.—p. 373.

*General Diseases Causing Abnormal Uterine Bleeding. J. E. Walker, Opelika.—p. 377.

Yeast Infections. G. Walsh, Fairfield.—p. 380.

Review of Adrenal Therapy. E. A. Bancker, Jr., Atlanta, Ga.—p. 383.

Rubin Test: Per Uterine Insufflation of Fallopian Tubes. C. K. Weil, Montgomery.—p. 387.

Pneumonia: Treatment by Inhalations of Carbon Dioxide. J. F. Alton, Selma.—p. 392.

Diseases Causing Uterine Bleeding.—Walker states that thrombopenic purpura, hypothyroidism and primary hypochromic anemia are frequent causes of abnormal uterine bleeding. In the absence of local pelvic pathologic disorders that adequately account for the uterine bleeding, no woman should be subjected to the perils and tragedy of an artificial menopause until these diseases have been eliminated by a general examination which includes gastric analysis, basal metabolism and a complete study of the blood. The failure to recognize any of these diseases as the cause of uterine bleeding is all the more deplorable since a specific type of therapy exists for each of them: splenectomy or roentgen irradiation of the spleen for thrombopenic purpura; thyroid for hypothyroidism, and massive doses of iron for primary hypochromic anemia. Primary hypochromic anemia is of particular importance since it has the blood picture always considered until recently characteristic of secondary anemia. The hemoglobin is often as low as 30 or 40 per cent in this disease.

American Journal of Clinical Pathology, Baltimore

3: 1-110 (Jan.) 1933

Experience with Hormone Test for Pregnancy. F. E. Sondern and I. J. Silverman, New York.—p. 1.

Results of Two Years' Experience with Friedman Test. H. L. Reinhart, Columbus, Ohio.—p. 9.

*Comparative Value of Monochlorobenzene and Thymol When Used with Fluoride as Preservatives of Blood for Chemical Analysis. R. C. Lewis and G. E. Mills, Denver.—p. 17.

Evidence in Support of Neuro-Epithelial Nature of Moles. A. C. Broders and Eleanor M. Fletcher, Rochester, Minn.—p. 29.

Flask for Diluting Antigens Used in Serum Tests for Syphilis. W. A. Hinton, Boston.—p. 41.

*Laboratory Diagnosis of Tuberculous Meningitis. A. G. Foord and Anna Forsyth, Pasadena, Calif.—p. 45.

Rose Bengal Test of Liver Function. W. P. Stowe, G. D. Delprat and A. Weeks, San Francisco.—p. 55.

Present Status of Serologic Diagnosis of Syphilis, with Especial Reference to Basic Principles. R. A. Kilduffe, Atlantic City, N. J.—p. 61.

Hemoglobin Standards. R. L. Haden, Cleveland.—p. 85.

Preservatives of Blood for Chemical Analysis.—Lewis and Mills found a combination of monochlorobenzene and potassium fluoride to be a more effective preservative for blood sugar, total nonprotein nitrogen and urea than thymol and potassium fluoride. Little change occurred in the uric acid and the creatinine with either combination. Specimens of blood may be transported, being in transit up to eight days with no appreciable change in either the blood sugar or the nitrogenous blood chemical constituents when a preservative combination composed of 0.275 Gm. of potassium fluoride and 0.2 Gm. of monochlorobenzene for each 20 cc. of blood is employed. The sugar is well preserved and only slight changes occur in the nonprotein nitrogenous constituents of the blood during a period of twelve days. Specimens of blood that are subjected to a temperature of 37 C. for twenty-four hours or longer will not

be satisfactorily preserved with monochlorobenzene and potassium fluoride or thymol and potassium fluoride. If a specimen of blood treated with monochlorobenzene and potassium fluoride has been subjected to high temperatures during transportation, there will be a failure of preservation of the chemical constituents of the blood. Such blood will contain numerous small clots, which will interfere with pipetting. The absence of such clots, therefore, offers a simple criterion as to successful preservation. When a specimen of blood is preserved by the addition of 0.2 Gm. of monochlorobenzene to 20 cc. of blood, oxalated specimens of blood may be stored in a refrigerator at 6 C. for ninety-six hours with practically no variation in the chemical constituents of the blood.

Laboratory Diagnosis of Tuberculous Meningitis.

Foord and Forsyth state that, in the diagnosis of tuberculous meningitis from cerebrospinal fluid, the finding of tubercle bacilli on smear or culture or the production of tuberculous in a guinea-pig injected with the fluid is conclusive evidence of the disease. By the last two means the diagnosis can rarely, if ever, be made before the patient is dead. Smear examination, if done on repeated samples, should reveal bacilli in from 80 to 100 per cent, depending on the technic and persistence of the examiner. But in the absence of a positive smear the following observations, especially when they are all present, should warrant the tentative diagnosis of tuberculous meningitis: (1) increased cell count, averaging about 200, producing a slight ground glass appearance in the fluid; (2) differential count showing marked preponderance of lymphocytes or a moderate number of polymorphonuclear leukocytes in smear-negative cases; (3) strong tests for globulin from 2 plus to 4 plus; (4) formation of an inverted pine tree web on standing for several hours or over night; (5) colloidal gold curve showing maximum precipitation in the sixth or seventh tube; (6) sugar content moderately or markedly reduced, averaging about 36 mg. per hundred cubic centimeters of fluid, and (7) decrease in chlorides below 650 mg. The authors especially stress the association of a marked decrease in sugar with a noteworthy decrease in chlorides in fluids not showing characteristics of a suppurative meningitis as a strong presumptive sign of tuberculous meningitis.

American Journal of Ophthalmology, St. Louis

16: 289-383 (April) 1933

Mooren's Ulcer. A. J. Bedell, Albany, N. Y.—p. 289.

Treatment of Corneal Infections. J. E. Weeks, Portland, Ore.—p. 293.

School Clinics. E. Jackson, Denver.—p. 298.

Choice of Operations in Secondary Glaucoma. W. W. Weeks, New York.—p. 301.

Ophthalmic Hospital at Madras: Historical Note. R. E. Wright, Egmore, Madras, India.—p. 308.

Nodular Degeneration of Cornea. J. H. Judd, Omaha.—p. 310.

Practical Cyclodamia. D. Smith, Bridgeport, Conn.—p. 319.

Experimental Hypertension and Retinal Arterial Spasm. S. A. Agatston, New York.—p. 327.

Siderosis Bulbi. M. Davidson, New York.—p. 331.

Archives of Internal Medicine, Chicago

51: 487-642 (April) 1933

"Dyspituitarism": Twenty Years Later, with Special Consideration of the Pituitary Adenomas. H. Cushing, Boston.—p. 487.

Periduesinitis and Pericholecystitis: Anatomic, Clinical and Roentgen Study of Adhesions in Upper Right Quadrant. S. G. Meyers and A. R. Bloom, Detroit.—p. 558.

*Acropachy: Secondary Subperiosteal New Bone Formation. H. M. Thomas, Jr., Baltimore.—p. 571.

Relationship Between Oxygen Consumption and Nitrogen Metabolism: II. In Leukemia. C. W. Balldridge and Adelaide Barer, Iowa City.—p. 589.

*Treatment of Polycythemia Vera (Erythremia) with Solution of Potassium Arsenite. C. E. Forkner, T. F. McN. Scott and S. C. Wm, Boston.—p. 616.

*Diagnosis of Obscure Cases of Pernicious Anemia. R. T. Beebe and M. M. Wintrobe, Baltimore.—p. 630.

Acropachy.—Thomas presents the case of a young Negro in whom diffuse goiter developed with hyperthyroidism, for which subtotal thyroidectomy was performed. Eight months later he presented clubbing of the fingers and brawny swelling of the legs, and, when examined two years later, was found to have an extreme degree of acropachy. A careful examination made at the time of operation and repeated on two further occasions, two and again four years after the operation, failed to reveal any other disease or lesion of the heart or lungs.

The author has found no mention of similar cases in the literature, but he discusses the important articles on acropachy as it occurs in various other conditions. Nothing is known concerning the mechanism of the bony changes in this syndrome. This new and unusual case adds strong evidence to the importance of altered blood flow in the production of subperiosteal new bone formation. The only conclusion he is able to reach, after considering the many factors involved in cases of acropachy, is that an altered blood flow offers itself as the most plausible common etiologic factor.

Treatment of Polycythemia Vera.—Forkner and his associates treated six cases of polycythemia vera by the oral administration of relatively large doses of solution of potassium arsenite. Distinct improvement in the clinical and hematologic manifestations has occurred in each case in from twenty to fifty days. The induced remissions were characterized by reduction of the erythrocyte, hemoglobin and hematocrit values to normal or nearly normal, reduction of the basal metabolic rate to normal, increase in body weight, increase in strength, and subsidence or disappearance of symptoms. The remissions may be prolonged at least for several months by continuation of the medication in reduced amounts. The administration of solution of potassium arsenite to patients suffering from polycythemia vera constitutes a safe and reliable method for the palliative treatment of this disease. The authors are now of the opinion that beginning doses of 3 or 4 minims (0.18 or 0.24 cc.) three times daily are somewhat better borne at the start and produce as satisfactory results as larger doses. This initial dose is continued for two days, and then the total daily dose is increased by 3 minims. This amount is given for two days. Thereafter the dose is increased at the same rate until the first sign of intoxication, anorexia, is noted. This sign, as a rule, is first noticed when the dose reaches about 24 minims (1.48 cc.) daily. When the dose of 8 or 10 minims three times daily has been reached, or earlier if indicated, the subsequent increments in amounts of the drug must be added more slowly at the rate of an increase of not more than 1 minim to the total daily dose. By such a method, medication may be carried up to 12, 15 or even 20 minims (0.74, 0.92 or 1.25 cc.) three times daily. The policy the authors have found of most value is to continue increasing the medicine until desired effects are obtained or until the limit of tolerance has been reached. Frequently, the best therapeutic results are to be obtained with the dose that is near the upper limit of tolerance. When the blood has improved considerably or when the limit of tolerance has been reached, the solution of potassium arsenite should be gradually withdrawn. The total daily dose may be decreased by 1 minim (0.06 cc.) daily until the patient is taking about 5 minims (0.3 cc.) three times daily, which amount may be continued without harm for at least several months. If severe toxic symptoms develop, the drug may be omitted for forty-eight or seventy-two hours and then resumed in doses equivalent to about three fourths or two thirds of the amount that the patient was taking at the time the symptoms developed. From this point, the drug may again be increased or decreased as indicated by the effects on the patient. The drug is best given either with or immediately after meals, well diluted in orange or tomato juice or some other flavored drink.

Diagnosis of Pernicious Anemia.—Beebe and Wintrobe report two cases in which it was not possible to make an absolute diagnosis of pernicious anemia by the usual methods of examination. Castle's discovery of the efficacy of hamburger steak, digested with gastric juice from normal persons, in producing a remission in pernicious anemia was utilized to establish the diagnosis in these cases. This was done by comparing the effectiveness of the gastric juice obtained from the patients in question with that of gastric juice from normal persons when fed to patients suffering from pernicious anemia. Such a test is of assistance in confirming the diagnosis: (1) when, because of infection, chronic disease of any nature and arteriosclerosis, the response to appropriate treatment is inadequate and leaves room for doubt as to the diagnosis; (2) in cases of damage to the spinal cord and little or no anemia, when an absolute diagnosis cannot be made on the basis of the morphology of the blood or of therapeutic tests, and (3) in patients with little anemia who are already receiving liver therapy and in whom cessation of treatment for the purpose of diagnosis might prove harmful and permit an onset or advance of the

damage of the spinal cord. The importance of making a definite diagnosis early in the disease is emphasized, particularly in patients suffering from involvement of the central nervous system. In such cases, if the diagnosis is definitely established, vigorous therapy can be continued for many years, with the full confidence of both the patient and the physician that the diagnosis is correct and that time and effort are not being wasted in treatment.

Florida Medical Association Journal, Jacksonville

19: 411-462 (April) 1933

- Meckel's Diverticulum. G. E. W. Hardy, Tampa.—p. 417.
Cancer of Cervix. T. F. Jackson, Dade City.—p. 419.
Responsibility of Medical Profession in Cancer Situation. J. M. Hoffman, Pensacola.—p. 421.
Recurrent Agranulocytosis: Report of Case. M. Mallory, Orlando.—p. 422.
Surgery of Sympathetic Nervous System. E. F. Fincher, Jr., Atlanta, Ga.—p. 424.
*Symptoms, Diagnosis and Treatment of Ileocolitis. N. L. Spengler, Tampa.—p. 428.
Perspective of Cancer. D. P. Bird, Lakeland.—p. 430.

Ileocolitis.—Spengler states that an examination of the urine should be made following all severe cases of colitis and that repeated examinations are indicated during the attack, because pyelitis is a frequent complication. The child should receive ample food of a good variety with a large residue of digestion, and the peristalsis should be controlled by opium. The well nourished baby with a negative history of illness, with hard and firm muscular development will comprise the mild cases. Patients with a more unfavorable past history, with useless fat, soft and flabby muscular tone, whether breast fed or artificially fed, will comprise the severe cases. In the severe cases, oral, rectal and nasal feeding should be employed in the order mentioned. Purgatives, with a twenty-four to forty-eight hour starvation period, are contraindicated in any case of colitis, except in the fermentative or toxic type. The diseased area of the ileum and colon in colitis is negligible so far as its effect goes on the normal absorption of food. An ample diet assures a normal amount of food, thereby maintaining a correct proportion between growth, repair and waste.

Journal of Bacteriology, Baltimore

25: 323-434 (April) 1933

- Study on Colloid Membrane Filters. I. Asheshov, Raguza, Dalmatia, Yugoslavia.—p. 323.
Id.: II. I. Asheshov, Raguza, Dalmatia, Yugoslavia.—p. 339.
Secondary Colonies of Bacteria, with Especial Reference to *Bacillus Mycoides*. I. M. Lewis, Galveston, Texas.—p. 359.
Bacteroides of Human Feces. A. H. Eggerth and B. H. Gagnon, Brooklyn.—p. 389.
*Significance of Brucellar Agglutinins in Human Serums. J. D. A. Gray, Liverpool, England.—p. 415.
Detection of Microbial Lipase by Copper Soap Formation. J. A. Berry, Seattle.—p. 433.

Brucellar Agglutinins in Human Serums.—Gray made a study of the occurrence, distribution and specificity of brucella agglutinins in the serums of human beings and immunized rabbits. In a series of 2,116 human serums submitted for the Wassermann test, 275, or 13 per cent, showed complete or partial agglutination in a dilution of 1:30. By means of a questionnaire it was shown that 15 of 62 women showing agglutinins in their serums gave histories of abortion; 53 of the 275 serums gave positive or doubtful reactions to the Wassermann test, and there was no obvious relation to TAB vaccination. In rabbits recently immunized by the intravenous inoculation of killed brucellae and in infected human beings, the specific agglutinins are located mainly in the carbonic acid soluble fraction of the serum. Those in the soluble moiety decrease, however, much more rapidly than those in the insoluble portion. Exposure of the serums and their fractions at 56 C. for a half hour, whether from infected or "normal" human beings or immunized rabbits, was usually associated with slight reductions in the titers. The zone phenomenon was observed with soluble and insoluble fractions as well as with whole serums. In a series of 40 serums selected for their high titers for brucellar suspensions from more than 5,000 routine Wassermann serums, the ratio of the titers of the soluble and insoluble fractions was as high as 10 in four serums. These four serums were obtained from persons who may have been experiencing recent infections. The remaining 36 samples gave ratios below 10 and were usually associated with a definite pathologic condition

other than a brucellar infection. A high ratio of the titers of the soluble and insoluble fractions may be characteristic of an early active or very recent infection and therefore a better diagnostic criterion than the titer of the whole serum when that is below 200. If further evidence accumulates to substantiate this conclusion, a high ratio would be of great value to public health officials in identifying present or recent infections in which the titer of the whole serum remains persistently low. During an attack of gonorrhea, an increase may occur in the brucellar agglutinins already present in the serum, but brucellar agglutinins have not been found to arise *de novo* during such an infection.

Minnesota Medicine, St. Paul

16: 219-286 (April) 1933

- Care of the Indigent: Methods and Plan of Operation. A. F. Branton, Willmar.—p. 219.
Surgical Consideration of Cerebral Lesions. A. W. Adson, Rochester.—p. 221.
Carcinoma of the Esophagus. E. C. Bartels, Duluth.—p. 226.
Primary Carcinoma of the Liver. J. F. Briggs, St. Paul.—p. 230.
Pitfalls in Diagnosis of Renal Tumors. T. H. Sweetser, Minneapolis.—p. 235.
New Surgery of Bladder Neck Obstruction: Improved Instruments and Methods: Review of Cases. F. E. B. Foley, St. Paul.—p. 240.
Etiology of Common Anal Pathology and Focal Infection. J. K. Anderson, Minneapolis.—p. 247.
Modern Methods for Caring for the Deaf and Hard of Hearing. H. Newhart, Minneapolis.—p. 251.
Treatment of Acute Infections of Extremities. J. M. Hayes, Minneapolis.—p. 255.
Abscess of the Mediastinum: Report of Case. H. J. Lloyd and R. G. Hassett, Mankato.—p. 257.
Congenital Abnormalities of Genito-Urinary Tract and Their Surgical Treatment. W. Walters, Rochester.—p. 260.
*Treatment of Intracapsular Fractures of the Hip. M. O. Henry, Minneapolis.—p. 263.
Dacryocystitis in Infants. R. A. Campbell, Minneapolis.—p. 267.

Treatment of Intracapsular Fractures of the Hip.—

Henry discusses closed and open surgical methods of treatment for intracapsular fractures of the hip. He believes that simple adhesive traction remains the method of choice in patients whose general condition will not tolerate more extensive treatment. The Whitman cast method, with Thomson's modification and Cotton's artificial impaction, is still the best treatment for the majority of cases of intracapsular fracture of the hip. Experimentation has shown that continuous and accurate contact with absolute fixation of the fractured surfaces is all important in these cases and that early functional stimulation of the circulation is likewise important. Ellis Jones's trochanteric transplantation is the best open surgical procedure for recent cases, but it must be reserved for selected cases. The modern walking caliper splint is a great aid to the patient with non-union who is not amenable to or suitable for further surgical treatment. Whitman's reconstruction operation is excellent in certain cases of nonunion.

Public Health Reports, Washington, D. C.

48: 411-436 (April 21) 1933

- *Inactivation of Antistreptococcus Bacteriophage by Animal Fluids. Alice C. Evans.—p. 411.

Antistreptococcus Bacteriophage.—The experiments of Evans show that antistreptococcus bacteriophage injected into mice inoculated with a minimal lethal dose of sensitive culture did not palliate the infection when the two doses were given simultaneously or when the bacteriophage and streptococci were incubated together previous to inoculation. There was some evidence that bacteriophage may activate a sublethal dose of the streptococcus in mice. Bacteriophage, injected intravenously into rabbits simultaneously with a dose of streptococcus which would kill the majority but not all of the control rabbits, failed to influence appreciably the mortality rate. There was some evidence, however, that the course of the disease was unusually violent in the bacteriophage treated rabbits that succumbed to the infection. The same results were obtained when bacteriophage was injected into rabbits three days before the infecting dose of streptococcus. Bacteriophage injected intravenously into a rabbit could be demonstrated in the blood until the second day, but it had disappeared from the blood on the third day. It could then be demonstrated in the spleen but not in the liver. In test tube experiments, bacteriophage is completely inhibited by blood, pus, ascitic fluid, bile and saliva, and

partially by urine. The fluid portion of blood and of pus contains the active inhibitory constituent, the washed whole cells being almost or quite inert under the conditions of these experiments. In addition to the definite inactivation of bacteriophage by undiluted or slightly diluted body fluids, there is an irregular inhibition in higher dilutions caused by unknown factors.

Texas State Journal of Medicine, Fort Worth

28: 803-874 (April) 1933

- Acute Basilar Fracture and Cerebral Injury. E. R. Carpenter and A. D'Errico, Dallas.—p. 810.
*Spontaneous Subarachnoid Hemorrhage. A. J. Schwenkenberg, Dallas.—p. 814.
Development of Brain Tumor. C. Phillips, Temple.—p. 819.
*Acute Aplastic Anemia with Recovery. H. F. Hawkins, Dallas.—p. 822.
Practical Points in Treatment of Tuberculosis. J. A. Sevier, Colorado Springs, Colo.—p. 826.
Gastric Anacidity. M. O. Rouse, Dallas.—p. 830.
Peribronchial Glands as Focus of Infection in Systemic Disease. J. W. Torbett, Marlin.—p. 833.
Tumors Complicating Pregnancy. W. E. Massey, Dallas.—p. 838.
Obstetric Complications in the Hands of the General Practitioner. H. B. Tandy, Abilene.—p. 840.

Spontaneous Subarachnoid Hemorrhage.—Schwenkenberg reports fourteen cases of spontaneous subarachnoid hemorrhage in which he noted the following principal signs and symptoms: (1) history of occasional mild headaches over a long period of time; petit mal attacks; (2) sudden onset, unconsciousness, coma and convulsions, localized and generalized; (3) signs of meningeal irritation, increased intracranial pressure, severe intense headache, rigid neck, Kernig's sign and other pathologic reflexes; (4) few localizing signs, more frequently third and sixth cranial nerve signs; (5) slight pyrexia, increase in leukocyte count, which is often very high, and (6) bloody spinal fluid, rapidly turning brown and yellow, unless more bleeding occurred. The treatment included complete rest, an ice bag to the head and repeated spinal punctures, gradually reducing the intracranial pressure and at the same time removing the blood pigment. It appears that the blood pigment irritates the meninges and is responsible for more discomfort than the increased intracranial pressure.

Acute Aplastic Anemia.—Hawkins presents a case of aplastic anemia in which, after the administration of cholesterol, the reticulocytes rapidly rose to 5 per cent and then gradually dropped as the normal blood elements became fixed at a safe level. It is known that cholesterol acts as a protective agent against hemolysis, but further study may reveal that under certain conditions it can act as a stimulant to hematogenesis. He states that clinical signs of bone marrow depressions following the use of the arsphenamines are uncommon but of serious import, and that cases have been reported following the use of all the arsphenamine products except tryparsamide. The reason for these reactions is unknown. They do not depend on arsenical or benzene intoxication alone, and the amount of drug necessary for causation varies as does the time of onset of the symptoms. The pathologic change is primarily an aplasia of the bone marrow. Hemic and other organic changes are always secondary and, differing from the pernicious anemias, there is no abnormal destruction of the blood elements in the circulation. The four clinical and cytologic types (simple purpura, thrombocytopenic purpura, agranulocytosis and aplastic anemia) have all a common pathologic basis. Simple purpura is unimportant clinically, but its development absolutely contraindicates further arsphenamine medication. Thrombocytopenic purpura carries a 50 per cent mortality. Agranulocytosis and aplastic anemia are fatal in the great majority of cases. Treatment consists of repeated transfusions, general supportive measures, and possibly iron and cholesterol orally.

Yale Journal of Biology and Medicine, New Haven

5: 301-420 (March) 1933

- The Scientific Activities of Frank Pell Underhill. H. G. Barbour, New Haven, Conn.—p. 301.
Oikonomia Medika. S. C. Harvey, New Haven, Conn.—p. 323.
Study of Fiber Tract Degeneration in Case of an Acoustic Neuroma. F. Beck, New Haven, Conn.—p. 343.
Question of Carbohydrate Production from Fat, with Especial Reference to Diabetes. Margaret Dann, New Haven, Conn.—p. 359.
Problem of Reflex Sensitivity to Light Studied in Case of Hemianopsia. E. R. Hilgard and G. R. Wendt, New Haven, Conn.—p. 373.
Hypersensitiveness and the Conditioned Reflex. G. H. Smith and R. Salinger, New Haven, Conn.—p. 387.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

S: 85-158 (April) 1933

Studies in Anemias of Infancy and Early Childhood: Part I. Introduction. L. G. Parsons.—p. 85.

Id.: Part II. Effect of Yeast on Nutritional Anemia in Rats. L. G. Parsons and Evelyn M. Hickmans.—p. 95.

Id.: Part III. Anhematopoietic Anemias (Deficiency Diseases of Erythron): Nutritional Anemia, and Anemias of Prematurity, Scurvy and Celiac Disease. L. G. Parsons and J. C. Hawksley.—p. 117.

*Copper in Treatment of Nutritional Anemia in Infancy. Helen M. M. Mackay.—p. 145.

Megaduodenum with Multiple Anomalies of Ileum: Case. R. H. Hunter.—p. 155.

Copper in Nutritional Anemia in Infancy.—Mackay attempted to demonstrate that iron and copper together produce a better response than iron alone in nutritional anemia by comparing a series of babies treated with both minerals and a series treated with iron alone. The comparison does not suggest that copper was of any benefit in this type of anemia. The types of response obtained with copper were like those customarily seen with iron and ammonium citrate alone, from which it seems fair to conclude that the deficiency affecting these babies was a deficiency of iron and not of iron and copper. The facts set forth when taken together indicate, in the author's opinion, that copper deficiency does not play any important part in the common nutritional anemia of babies. Such negative results, however, do not show that copper deficiency never occurs in babies suffering from iron deficiency. It is possible that a baby might be born with insufficient copper as the result of a maternal dietetic deficiency and so develop a nutritional anemia due to both copper and iron deficiency. However, iron salts with only minute and presumably insignificant traces of copper have been found effectual in the treatment of this anemia, but the indications are that copper deficiency is uncommon. When considering possible copper deficiency, the varying copper content of milk is of considerable interest. Human milk being richer in copper than cow's milk, it can be assumed that copper deficiency is more likely to occur in bottle fed babies. This is also true of ordinary cow's milk on the market as compared with the copper content of milk obtained under special precautions to prevent any copper contamination. Quam and Hellwig observed that, if milk is pasteurized in contact with copper, the copper content of milk, from 0.26 to 0.52 mg. of copper per liter of milk, before pasteurization was changed to from 0.6 to 0.7, and Görtz and his co-workers observed that from 0.09 to 0.14 mg. of copper per liter of milk was changed to from 0.17 to 0.29. In the dried milk used for the control cases in the author's work on infantile anemia, estimations of copper in two samples gave 0.19 and 0.25 mg. of copper per liter of reconstituted milk, as compared with a value of from 0.12 to 0.18 mg. of copper per liter of fresh milk, as estimated by Elvehjem, Steenbock and Hart by the same technic; therefore it is possible that the copper contamination of cow's milk given to babies may actually be a factor of importance in preventing copper deficiency. The fact that large doses of iron salts are desirable in the treatment of anemia has been explained by some authors on the hypothesis that the traces of copper present in these salts are of fundamental importance; but, if the author's conclusions are correct, this hypothesis is incorrect.

Journal of Tropical Medicine and Hygiene, London

36: 109-124 (April 15) 1933

*Little Known Type of Chronic Colitis (Chronic Metadysentery). A. Castellani.—p. 109.

Prevalence of Rhinosporidiosis Among Sandworkers in Poona, with Brief Description of Some Histologic Features of Rhinosporidial Polypus: Preliminary Note. A. J. Noronha.—p. 115.

Chronic Colitis.—Castellani discusses a type of chronic colitis due to a group of intestinal bacilli called "metadysentery bacilli," and for which Cerruti has created the genus *Castellanus*. The condition starts in childhood or youth and lasts for years, in some cases apparently the whole life, and is characterized by recurrent attacks of simple diarrhea, with absence or only occasional presence of dysenteric symptoms, and periods of quiescence lasting for several months or even a year or two. During the periods of quiescence the patient suffers from vague

abdominal discomfort, flatulence and constipation. He feels nervous, tired and disinclined to work. The objective examination of the abdomen reveals little; occasionally parts of the abdomen are tender on palpation, especially the region of the sigmoid, the appendix or the gallbladder. The symptoms in the latter region may be due to reflex irritation of the duodenum caused by the inflammatory changes in the lower portion of the colon. Each attack of diarrhea may begin suddenly, with severe abdominal pain or only abdominal discomfort; it lasts from a few hours to several days. The stools during the attack are fluid, brownish or yellow and frothy and contain mucus, but, as a rule, they do not contain blood. Fever of low intermittent or irregular type may be present for long periods with few or no intestinal symptoms. In fact, the metadysentery bacilli were first discovered in these cases. True dysenteric attacks caused by the same germs occur. Cystitis is not a rare complication, and in the urine metadysentery bacilli will be found either alone or with coli and coliform organisms. Jaundice may occur. In some cases the sigmoid colon is especially affected and all the symptoms of localized sigmoiditis may be present, with severe pain in the lower left quadrant and resistance on palpation. Occasionally, true acute appendicitis develops, due to the organisms producing the colitis. A positive diagnosis can be made only by bacteriologic search for the three principal types of metadysentery bacilli, viz., *Bacillus ceylonensis A*, *ceylonensis B* and *madampensis*. When the agglutination is higher than 1:80, repeated bacteriologic examinations of the stools will often reveal the presence of one of these three organisms. The author recommends complete rest in bed and a fluid diet. Milk is the best diet. Autogenous metadysentery vaccines are of value. The administration of a stock metadysentery vaccine containing *Bacillus ceylonensis A*, *ceylonensis B* and *madampensis* has given good results. It should be administered in small doses, from 2 to 10 minims (0.12 to 0.6 cc.) two or three times a week. Treatment should be continued for a period of at least six weeks. To ensure a permanent cure it is advisable to repeat the course after an interval of from two to four months, even in cases in which the colitis symptoms have completely disappeared, as the "cure" is often merely an apparent one, the infection remaining latent for long periods of time.

Medical Journal of Australia, Sydney

1: 449-480 (April 15) 1933

Shark Attacks in Australian Waters. V. Copleson.—p. 449.

1: 481-510 (April 22) 1933

Short Account of Five Hundred Consecutive Cases of Labor. F. W. Carter.—p. 481.

Some Notes on Surgical Catgut. T. H. Small.—p. 487.

Tubercle, London

14: 337-384 (May) 1933

*Study of Acid Fast Organisms Other Than Mammalian Tubercle Bacilli Isolated from Disease in Man: Occurrence of Avian Tubercle Bacillus Infection of Men and Diagnosis of Avirulent Avian Tubercle Bacilli. A. Branch.—p. 337.

Some Clinical Types of Tuberculosis: III. L. S. T. Burrell.—p. 353.

Study of Acid Fast Organisms.—Branch studied a number of acid fast organisms isolated from man which had been reported as nonmammalian tubercle bacilli. Some of these strains of nonmammalian tubercle bacilli appear to belong to the avian group, while others are not type tubercle bacilli but probably new strains of pathogenic acid fast bacteria. The author states that, in spite of the fact that a strain of avirulent avian tubercle bacilli does not produce progressive tuberculosis in the fowl, one should feel justified to conclude by its cultural characteristics and its ability to form tuberculin, by the lesions produced in rabbits and by its ability to absorb agglutinins from a virulent avian tubercle bacillus rabbit antiserum that this strain is an avian tubercle bacillus of diminished virulence. These strains cause the greatest difficulty in diagnosis and one must guard against considering them nontubercle bacilli. Avirulent avian tubercle bacilli are capable of forming tuberculin and of sensitizing fowls to a known tuberculin. Inoculation of the common white mouse has proved a useful aid in diagnosing acid fast strains which are not type tubercle bacilli or saprophytes. After large intraperitoneal doses, multiple abscesses develop in the kidneys.

Presse Médicale, Paris

41: 1041-1056 (July 1) 1933

- *Ammonium Chloride for Treatment of Scleroderma. R. Leriche and A. Jung.—p. 1041.
Syphilis Unrecognized by Error of Biopsy. Gougerot.—p. 1041.
Subtrapezian Ganglions and Neuralgias of Brachial Plexus of Dental Origin. J. Veyrassat.—p. 1043.

Ammonium Chloride for Treatment of Scleroderma.—

Leriche and Jung successfully treated a case of scleroderma of the face in a woman by the daily administration of 3 Gm. of ammonium chloride in combination with an acid forming diet. After twenty days of this therapy, the sclerodermatous plaques were softened and decreased in size and the itching had entirely disappeared. The calcemia had decreased from 0.103 Gm. to 0.089 Gm. and the general condition of the patient was improved. Discontinuation of the ammonium chloride and substitution of thyroid and parathyroid extract (previously used unsuccessfully) caused a recurrence of the symptoms, but a return to the acid diet and ammonium chloride therapy caused the symptoms to disappear again. A similar result was obtained with ammonium chloride in another case. The acidifying diet increases the elimination of calcium in the urine, and the acidosis, produced by large doses of ammonium chloride, increases the calcium elimination in the same manner.

Archiv für Gynäkologie, Berlin

153: 359-615 (June 15) 1933

- Treatment of Puerperal Pyemia (Ligation of Veins). H. Küstner.—p. 359.
*Development of Female Genital and Peritoneal Tuberculosis in Primary Infection of Intestinal Canal and Significance of Retrograde Lymphogenic Mode of Infection. H.-U. Hirsch-Hoffmann.—p. 375.
Further Investigations on Puerperal Pregnancy Reaction on Sexually Mature Nature of Beginning Transformation. I. 394.
Structural Changes of Plasma Protein in Puerperal Fever. A. von Latzka.—p. 408.
Carbohydrate Metabolism During Pregnancy and Its Sequelae (Sugar and Diastase Determination in Blood). P. Goldschmidt-Fürstner.—p. 417.
Metabolic Actions of Sex Hormones on Sex Organs. S. Aschheim and H. Gesenius.—p. 434.
Protein Metabolism and Renal Function of Organism During Pregnancy and During Early Puerperium. O. Bokelmann and W. Scheringer.—p. 447.
Analysis of Blood Radiation According to Gurwitsch. H. Gesenius.—p. 468.
Feebleness of Labor Pains and Echolies. L. Bickel.—p. 482.
Somatic Sequelae and Accompanying Manifestations of Interruption of Pregnancy by Abdominal Uterotomy with Simultaneous Sterilization. Mary Stutz.—p. 512.
*Connections Between Premature Detachment of Placenta and Renal Diseases. J. Batisweiler.—p. 536.
Developmental Disturbances of Pelvis in Feebleness of Labor Pains. H. Fedtke.—p. 553.
*Symptom-Free Time of Cancer of Uterus. F. Stahler.—p. 561.
Alimentary Lipemia During Pregnancy. W. Raab.—p. 571.
Picture Technic of Lateral Pregnancy and Pelvis Exposures: How to Obtain Evenly Exposed Roentgen Films by Equalizing Ray Filtration. A. Pickhan.—p. 578.
Permeability of Placenta for Lead. Anny Baumann.—p. 584.
Masculine Pseudohermaphroditism: Case. R. Cadiz and A. Lipschutz.—p. 593.
Animal Experiments on Relations Between Pregnancy and Thyroid. K. J. Anselmino and F. Hoffmann.—p. 612.

Female Genital Tuberculosis.—Hirsch-Hoffmann doubts the possibility of a primary tuberculosis of the female genitalia and he points out that even the pathogenesis of the secondary tuberculosis of the female genitalia is not fully understood as yet. Although different modes of infection such as contact, intracanalicular metastasis (for instance from the peritoneum to the uterine tubes), lymphogenic infection and hematogenic infection have been generally recognized, the opinions still differ about the frequency of these four modes of infection. The author experimented on rabbits and made careful studies on some of the nurslings who died as the result of the ill fated tuberculosis vaccination in Lübeck. The observations on these nurslings are especially noteworthy because the infection originated in the intestinal tract and not, as is usually the case, in the respiratory tract. The author reaches the following conclusions: 1. In a severe primary tuberculous infection of the intestine, the peritoneal tuberculosis develops primarily by way of the lymph channels. 2. The same applies, although in a lesser degree, to tuberculosis of the female genitalia. In these cases the lymphogenic and the hematogenic modes of infection are of about equal importance. 3. The involvement of the connective tissues surrounding the genitalia is particularly frequent

in primary intestinal infection, developing lymphogenically either from the intestine or perhaps also from the peritoneal tuberculosis. 4. A retrograde lymphogenic spreading of tuberculosis for a short distance and in case of disturbances in the discharge of the lymph may be considered possible. 5. The intracanalicular development of tuberculosis of the female genitalia from the peritoneum is of less importance than the lymphogenic and hematogenic infection.

Premature Detachment of Placenta and Renal Diseases.

—Batisweiler shows that renal disease which may lead to anuria is frequently present in women in whom the placenta is detached prematurely. The renal disorder has the aspects of an interstitial nephritis in which the degenerative changes are slight. Edema is generally absent, the rest nitrogen and the blood pressure are increased, but the chloride content is normal. In the pure form, eclampsia is generally absent. From the standpoint of pathologic anatomy it is noteworthy that there may be a chronic suppurative inflammation or a leukocytic infiltration with edematous swelling in the interstitial portions of the kidney. The therapeutic problem is as yet unsolved. Decapsulation may be successful, but because this serious intervention has failed in some instances it is now generally rejected. The author considers more promising the administration of large amounts of fluid by the intravenous, subcutaneous, oral and rectal routes. The daily administration of from 5 to 6 liters of fluid will keep the blood pressure relatively high, which is an important factor in the therapy, because the high pressure assumes the rôle of defense mechanism against anuria. For this reason, frequent determination of the blood pressure is advisable. The author shows that two types of renal disturbances may develop in the course of gravidity: (1) the form of nephrosis in which sodium chloride and water are retained and in which edema exists, and (2) the form of nephritis characterized by nitrogen retention and by retinitis. He states that other authors have succeeded in producing premature detachment of the placenta and interstitial nephritis in animal experiments.

The Symptom-Free Time of Cancer of Uterus.—In studying a material of 200 cases of uterine carcinoma, Stähler found that the period in which there are no symptoms averages two and seven-tenths months. In seven patients in whom the carcinoma was accidentally discovered, the symptom free period was four and three-fourths months. Even if advice has been sought as early as possible, every eighth woman (25 out of 200), who has carcinoma of the uterus, is in an already inoperable condition at the time treatment is begun, for the cancer has been latent for four and one-half months. An influence of the age of the patient on the duration of the latent stage could not be recognized.

Dermatologische Wochenschrift, Leipzig

96: 865-908 (June 24) 1933

- Ramel's Test for Demonstration of Tuberculous Nature of Cutaneous Rheumatoids and of Lupus Erythematoses. R. M. Bohnstedt.—p. 865.
Syringoma: Case. J. Wendtberger.—p. 868.
Occupational Signs in Glaziers, Watchmakers, Barbers and Day Laborers. H. Mierzecki.—p. 871.
*Urethritis Pseudodiphtherica with Articular Involvement: Nongonorrheal Urethritis. Smolka.—p. 876.
Treatment of Gonorrhea in Women. P. J. Metzmacher.—p. 881.
Is It Malpractice If Physician Decides Against Syphilis Without Resorting to Blood Test? C. Bruhns.—p. 883.

Nongonorrheal Urethritis.—Smolka maintains that nongonorrheal urethritis has been increasing in recent years. He thinks that the increased incidence is due partly to the fact that now more cases are etiologically explained, but to a greater extent to the wider use of contraceptives and to the application of chemical antibacterial substances, which are employed for the prevention of venereal infections. He mentions various forms of nongonorrheal urethritis and discusses particularly the form caused by a pseudodiphtheria bacillus. After describing the symptomatology of this form of urethritis, he points out that the male urethra is usually infected during coitus, and that pseudodiphtheria bacilli are more frequent in the female genitalia than is generally believed. The treatment of urethritis pseudodiphtherica is difficult, for the condition frequently proves refractory to various measures. This is illustrated by a case report, which is noteworthy because articular metastases developed.

Deutsche medizinische Wochenschrift, Leipzig

59: 949-988 (June 23) 1933

- External Operations on Larynx. G. Hofer.—p. 949.
 *Arterial Hypertension and Venous Pressure in Human Beings. C. Ernst.—p. 952.
 *Results of Vitamin A Treatment During Childhood. F. Erben.—p. 954.
 Disturbances in Carbohydrate Metabolism Produced by Anesthesia and Their Clinical Significance. H. Heller and P. Nathan.—p. 956.
 Light General Anesthesia and Short Anesthesia in Children with Sodium Salt of a Barbituric Acid Derivative. E. A. Voss.—p. 958.
 Hematologic Studies in Malignant Diphtheria. H. Mommsen.—p. 960.
 Permanent Vertigo. K. Mendel.—p. 960.
 Peculiar Change of Duodenum and Upper Jejunum. H. J. Tiedemann.—p. 964.
 Acute Yellow Atrophy of Liver Ending in Recovery. Teilgmann.—p. 965.

Arterial Hypertension and Venous Pressure.—Ernst determined the venous pressure of fifty patients with arterial hypertension and never found a noticeable increase, whether the hypertension was of the essential type or nephrogenic, and whether the arterial pressure was extremely high or of medium severity. He examined only those patients in whom circulatory decompensation could be excluded, and he thinks that, considering the comparatively large number of cases, his observations can hardly be accidental. In discussing the genesis of increased venous pressure, he expresses the opinion that it can be traced to an incipient cardiac insufficiency.

Results of Vitamin A Treatment During Childhood.—Erben employed a standardized vitamin A preparation of high potency in the treatment of forty nurslings and small children. The children treated were primarily dystrophic nurslings with relapsing catarrhal infections and rickets. The dose of vitamin extract was five drops twice daily, and the duration of the treatment averaged twenty-seven days with a maximum of sixty-six days. Of twenty-three children, seventeen showed a considerable increase in weight, eleven of whom had been treated before without this result. In two instances the weight increase did not set in until after the vitamin treatment had been discontinued. The incidence of catarrhal infections was not influenced by the vitamin treatment, but their course was generally less severe and the disturbance they produced in the general condition and the decrease in weight was less. The constitutional eczema of nurslings was not noticeably influenced by the vitamin A treatment.

Monatsschrift f. Geburtshilfe u. Gynäkologie, Berlin

94: 209-320 (June) 1933

- Remarks and Suggestions on Draft of Bill for Eugenic Sterilization. L. Seitz.—p. 209.
 Menstrual Cycle and Lipoid Content of Uterine Mucous Membrane. Ingeborg Gohlisch.—p. 223.
 *Criticism of Fatalities Caused by Tribrom-Ethanol. H. Dienz.—p. 227.
 *Spontaneous Amputations by Amniotic Threads May Be Caused by Primary Inferiority of Ovum. L. Seitz.—p. 236.
 Vaginal Injuries. F. Hinrichs.—p. 240.
 Significance of Six Phase Microsedimentation of Erythrocytes for Gynecology in Comparison with Macrosedimentation According to Linzenmeier. E. W. Winter.—p. 245.
 Recognition and Treatment of Carcinoma. O. von Franqué.—p. 254.
 Cerebral Embolism as Sequel of Criminal Abortion: Favorable Course of Case. K. Fuge.—p. 273.
 Differential Diagnosis of Abdominal Hernia and Tumors in Hernial Regions. O. Heseler.—p. 277.
 Vaginal Extirpation of Uterus During Delivery. W. Rosenstein.—p. 282.

Criticism of Fatalities Caused by Tribrom-Ethanol.—Dienz describes the clinical history and the postmortem examination of a woman who died following anesthesia with tribrom-ethanol. Although it appeared at first that the death of the patient was caused by the anesthesia, the postmortem examination revealed that this was not the case. 1. A respiratory disturbance, which generally predominates in the toxic injuries caused by tribrom-ethanol, was not present in this case. 2. The necropsy revealed no organic changes that could be traced to tribrom-ethanol, and the fatty degenerations that were observed were within the limits of the general status of the obese patient. 3. The disturbance of the consciousness, which persisted in this patient for several days, has never been observed in tribrom-ethanol fatalities and therefore is probably not a result of the anesthesia. Death was caused by embolic hemorrhages and by softening processes in the brain, originating in a verrucose relapsing endocarditis of the mitral valve. That such a process of cerebral softening may lead to prolonged disturbances in the consciousness is well known. The

presence of old foci in the brain indicates that the patient had had embolisms before, and the author considers a causal connection between the rectally administered tribrom-ethanol and the embolic processes doubtful. Nevertheless, he thinks that in circulatory and cardiac disturbances it is advisable to resort to another anesthetic method. Other contraindications to the use of tribrom-ethanol are diseases of the liver and of the kidneys, serious pulmonary disturbances, severe cachexia and thyroidal disorders, particularly exophthalmic goiter. Smaller doses of the anesthetic are advisable in aged persons, in obesity, in dehydration and after great loss of blood. However, aside from these restrictions the author intends to continue the use of tribrom-ethanol anesthesia, since he has had only favorable experiences with it. His main object in reporting this case was to show how easily a fatality may erroneously be ascribed to this anesthetic, and he demands a careful postmortem examination in all such cases.

Spontaneous Amputations by Amniotic Threads.—

According to Seitz, the presence of amniotic threads or of thread furrows indicates only the mechanical process of spontaneous amputation and not the primary cause of it. He considers two possible origins; namely, the primary inferiority of the ovum or developmental disturbances in the mother, such as inflammatory processes, circulatory disturbances and changes in the humoral-hormonal combination. He thinks that the majority of gynecologists are of the opinion that amputation produced by amniotic threads is a result of the latter factors (developmental disturbances in the mother). The problem has not only a theoretical but also a practical significance, for, if disturbances in the mother are the cause, attempts have to be made to cure them, whereas, if the amputation is due to a primary deficiency of the ovum, it cannot be influenced, unless it is possible to change one of the two factors (maternal and paternal) determining the development of the fertilized ovum. The author was able to observe a case which proves that amniotic threads are caused by a primary inferiority of the fertilized ovum. He reproduces a photograph of a family in which four children show malformations of arms and legs; that is, amputations produced by amniotic threads. The parents of these four children were brother and sister. The same picture shows two other entirely normal children who were the offspring of the same man but of another woman, who was not related to him by blood. The fact that, with the exception of the amniotic amputations, the four children are healthy proves that the primary deficiency was limited to that part of the ovum from which the amnion develops. This observation shows that marriages between relatives should be avoided.

Hospitalstidende, Copenhagen

76: 661-712 (June 15) 1933

- *Experimental Investigations in Explanation of Immunity in Tuberculosis: I. O. Thomsen and K. Pedersen-Bjergaard.—p. 661.
 Bartonella Infection in White Rats: Preliminary Report. G. Alsted.—p. 699.

Immunity in Tuberculosis.—Thomsen and Pedersen-Bjergaard followed the course of primary infection with a human strain of tubercle bacilli in a series of guinea-pigs, especially at the place of inoculation and in the regional glands. The strain was not maximally virulent in spite of the small lethal minimal dose of 1:100,000,000, probably because of protracted cultivation on artificial mediums. Abscess formation occurred at the place of inoculation, usually with healing sooner or later. There was also constant abscess formation in the regional glands, with metastatic infection of spleen, lungs and liver. The response of the infected organism consisted of two reactions, leukocyte migration (abscess) and formation of specific tuberculous granulation tissue. The authors state that the first, an expression of the organism's relative superiority, also depends on the quantity of tubercle bacilli, a certain number being assumed to be necessary to cause leukocyte migration. When the number of tubercle bacilli is too small, formation of tuberculous tissue occurs. The hypersensitivity reaction apparently plays a part only in infection with considerable quantities of tubercle bacilli. Preliminary treatment with lipoids causes a marked increase of phagocytosis in the regional glands but also greatly promotes the increase of tubercle bacilli in the glands. Preliminary treatment with killed bacilli has a similar but weaker effect.

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THE NEED FOR CONSERVATISM IN ENDOCRINE THERAPY AND RESEARCH

CHAIRMAN'S ADDRESS

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BALTIMORE

The medicinal agents of the therapeutic armamentarium at the present time are made up largely of drugs derived from the vegetable or mineral kingdoms, or of products synthesized in the laboratory, while the substances of animal origin that fall in this category are relatively few. And yet, as Professor Abel was accustomed to point out in his lectures in pharmacology, the animal body manufactures within itself many products that are among the most powerful drugs known. Verily, he said, we are walking drug shops. The truth of these statements gains in significance almost daily with increasing knowledge of the number and astounding potency, in some instances, of these autopharmacologic substances (Dale), which play a dominant rôle within the body, in respect to its structure, its maintenance in health and its preservation in times of invasion by disease. In addition, there is a vast group of compounds elaborated in the bodies of the lower forms of animal life, which exert a powerful and often fatal effect on higher animals and men. These toxic compounds have been discussed at length in several monographs by Faust and others, and more recently by Professor Karl F. Meyer of the University of California in an entertaining lecture entitled "The Animal Kingdom—A Reservoir of Disease." Indeed, it seems safe to say that while our knowledge regarding the chemistry and pharmacology of substances of non-animal origin is much more extensive at the present time than that of animal products, we are at the portals of a new era in which the animal body and products of animal origin will be much more intensively studied. Even now we already find among our most powerful and useful drugs such compounds as epinephrine, thyroxine, posterior pituitary preparations, insulin, liver and stomach extracts and that large group of substances collectively termed serologic products (antitoxins, antivenins, and so on).

The center of the stage at present is occupied by the products elaborated in the endocrine glands. Twenty years ago Sir William Osler referred to these structures in the following terms:

There is perhaps no more fascinating story in the history of science than that of the discovery of these so-called ductless

glands. Part of its special interest is due to the fact that clinicians, surgeons, experimental physiologists, pathologists and chemists have all combined in splendid teamwork to win the victory. No such miracles have ever before been wrought by physicians as those which we see in connection with the internal secretion of the thyroid gland. The myth of bringing the dead back to life has been associated with the names of many great healers since the incident of Empedocles and Pantheia, but nowadays the dead in mind and the deformed in body may be restored by the touch of the magic wand of science. The study of the interaction of these internal secretions, their influence upon development, upon mental processes, and upon disorders of metabolism, is likely to prove in the future a benefit scarcely less remarkable than that which we have traced in the infectious diseases.

It is indeed gratifying that such enthusiasm over the therapeutic agents of animal origin should emanate from Sir William Osler, who, although not to be classed as a "therapeutic nihilist," nevertheless adopted a very conservative attitude toward the efficacy and use of drugs. Is there any need or reason, then, for hesitating to regard those endocrine products which have either established or potential therapeutic value as drugs the study of whose action and clinical applications fall in the sphere of interest of pharmacology and therapeutics?

The extraordinary possibilities in this field of work, as also the startling advances that have been made, have been adequately discussed by others and will not be rehearsed here. On the contrary, it is rather my purpose to call attention briefly to the abuses which inevitably occur in a subject such as endocrinology, in which ample scope is provided for flights of the imagination and an opportunity not only for the making of uncritical and fanciful statements but also for outrageous exploitation.

Some of the present-day advertisements of endocrine preparations suggest a state of affairs such as existed in the seventeenth and eighteenth centuries, when animal products of all kinds were claimed to have remarkable curative properties—the well known Dreck Apotheke of earlier times. There is urgent need for curbing this promiscuous advertising of certain glandular extracts for which exorbitant and baseless claims are made as to their therapeutic efficiency. In this connection there are difficulties which can probably never be circumvented because they are concerned with the integrity of certain individuals who are not touched by ethical considerations and who operate within the outer limits of the law. The effective work of the American Medical Association, through its publications, its Council on Pharmacy and Chemistry, its Chemical Laboratory, and its Bureau of Investigation (formerly known as Propaganda for Reform) is, no doubt, familiar to all. Their efforts are directed toward educating and protecting the medical profession against prescribing valueless or

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harmful medicinal products, and in exposing and giving extensive publicity to fake remedies and to quacks who peddle their wares to the public at exorbitant prices. The labors of the American Medical Association are, however, mainly educational, and in order to control and reduce the trade in useless or harmful medicinal products to a minimum there must be operative an efficient statutory machinery. Unfortunately, however, the present Food and Drugs Act is very ineffectual and its limitations impose severe handicaps on the control of such questionable preparations. The following are only a few examples which will illustrate the inadequacy of the existing statutes:

1. At present, in order to obtain a judgment against a nostrum (and among the worst nostrums are some endocrine products), it is necessary to prove not only that the therapeutic claims made for it are false but also that the manufacturer, in making such claims, knew of their falsity and hence was guilty of fraudulent misrepresentation. Only those who are familiar with court procedure can have any idea of the difficulties which beset the federal officials in proving to a lay jury that the exploiter of the nostrum has not only misrepresented his product but did it with full knowledge of his misrepresentation. These facts were clearly illustrated in a recent case in which the government instituted proceedings against a notorious preparation which is a simple liniment, composed essentially of turpentine, ammonia and eggs, and was claimed to be a remedy for such serious diseases as tuberculosis, pneumonia and influenza. The pamphlet setting forth the claims was worded very cleverly and evasively. The government officials in charge of the preparation of the evidence were tireless in their efforts, which extended over many months. In addition, the government felt it necessary to introduce as witnesses nineteen scientists, all recognized authorities in their chosen field of work. A three weeks' hearing of the case was required before a judgment against the fraudulent "consumption" remedy could be secured.

2. The act is wholly powerless to control false advertising, since its terms apply only to the statements appearing on or within the package as it moves in interstate commerce. The necessity of adequate control of advertising is self evident.

3. There is no provision in the existing law for the regulation of products for which there are no adequate tests or standards and which are unstable. This is especially true in the case of a number of endocrine preparations that are offered for sale.

4. In the case of drugs recognized in the United States Pharmacopeia or National Formulary, the federal statute requires that the tests as prescribed in these authorities be applied. However, when these tests are inadequate, serious difficulties are presented. A case in point is the recent disastrous epidemic of ginger paralysis occasioned by the consumption, as a beverage, of a bootleg preparation sold as "Fluid Extract of Ginger U. S. P.," which was adulterated with triorthocresyl phosphate. The Pharmacopeia contains no test for this compound in the ginger extract. Defense counsel at the trial of the parties responsible for the criminal distribution of this poisonous extract made a strong point of this omission, alleging that in the absence of a specific U. S. P. test the government was debarred from applying its own chemical method to establish the presence of the poison.

The instances cited are typical shortcomings of the present act, which needs to be radically changed. This fact is well recognized by the officials of the Department of Agriculture, who now have under consideration the drastic revision of the act. This movement, which is of such vital importance to the medical profession, should have the active support of every physician so as to ensure the enactment by Congress of the necessary legislation at an early date. To provide for the more adequate regulation of products which are not shipped outside of the state in which they are manufactured, and which, therefore, do not come within the federal jurisdiction, the various states should also strengthen their food and drug laws.

Practically every important drug that has been introduced into medicine during the past sixty years or more has come by way of the laboratory, where its pharmacologic actions were determined by experimentation. Thus has modern therapeutics been put on a rational basis and there is no excuse for physicians using worthless medicinal products.

With regard to the therapeutic use of endocrine products there is special need for conservatism, since much of the knowledge about a number of these substances is still in the making and their proper use in patients has not yet been determined. It is needless to say that the foregoing remarks are not addressed to those workers, whether they be in a university laboratory or clinic or associated with an ethical pharmaceutical house, who are working with endocrine products with a view to obtaining them in purer form and ascertaining their pharmacologic actions and possible therapeutic uses. Objection is rather voiced against those individuals who are placing on the market products which not only have no beneficial effects but may actually be harmful.

Even in the conservative and legitimate sphere of the experimental approach to an understanding of the rôle of the ductless glands in the animal organism or of the physiologic actions engendered by the introduction of potent extracts into experimental subjects, there is need for caution, since in this difficult and complex field of knowledge the pitfalls are many. A few illustrations will be helpful, and again let me say that these examples are chosen not with the object of being unduly critical but rather to illustrate some of the points I have in mind.

Among the common methods of studying the functions of any particular organ is the preparation of an extract made from the particular structure by the use of suitable solvents. Such extracts, as a rule, contain only a small amount of the active hormone, mixed with a large amount of foreign material, usually proteins or cleavage (or degradation) products of proteins. In some instances the latter groups of substances have physiologic actions which may be diametrically opposite to the action of the hormone itself and may actually obscure its main effect. This fact has often been overlooked and is one of the most important reasons for the many controversies that arise in connection with the rôle of the hormones in the body. Of course, it would be ideal to work only with substances that are chemical individuals and free from impurities, but unfortunately at present most of the hormones have not been isolated in chemically pure form, and until they are it would seem very desirable to refrain from making final conclusions in regard to every one of their

actions, as observed in mixtures. No doubt, even then, there are many problems in the way, but at least one obstacle will have been removed.

Now let me illustrate with a few examples. Some six years ago several investigators reported that immediately after the injection of commercial insulin (impure products) there occurred a marked rise of the blood sugar which was followed by the well known hypoglycemic action. This initial rise of blood sugar was interpreted as an immediate and direct effect of insulin on the glycogen reserve in the liver. Numerous experiments were also made with these impure preparations in an effort to learn something of the mechanism of action of this important hormone, and a series of conflicting reports was published. When crystalline insulin became available it was soon found that the initial hyperglycemia never occurred after injection of the crystalline hormone. Hence the initial rise of sugar was not at all attributable to insulin but was caused by the impurities present in the commercial samples used. Here, then, is an illustration of how easy it is to make erroneous deductions when impure preparations are used and, furthermore, how the impurities in some instances have physiologic properties diametrically opposite to that of the hormone itself. It can be readily seen that very little headway will be made in studies whose object it is to ascertain the mechanism of action of insulin in the body, unless the pure product is used.

A reliable method of determining the potency of any biologic product is absolutely essential for both the research worker and the clinician. At times advances in our knowledge of a particular product are greatly hampered because of the lack of a suitable method of assay. The difficulties may be enhanced if the extract is unstable or undergoes degeneration on standing. Some experience in the development of our present knowledge of the ovarian hormone, which is now available in crystalline form, may be of interest in this connection. Professor Frank¹ cites a summarized table of seven ovarian preparations that were either purchased in the open market or secured from reliable pharmaceutical firms. The potency of each product was determined by Dr. Frank and compared with the strength as given on the label. In every case there was a marked discrepancy in the unitages. Professor Frank's comments are that "these titrations are extremely disappointing, showing that even if the material left the hands of the manufacturer with the amount of mouse or rat units labeled, deterioration rapidly destroys most of the activity and makes the clinical use illusory." Since then progress has been made, so that theelin and related products are now available in stable form, and a uniform method of assay, with an international unit, has been proposed and is now in operation.

One need only mention in passing that the experimental results obtained with drugs in one species of animal are frequently not translatable to other species. Theelin serves as a good illustration of this point. While the results with theelin and related products are very striking in experiments on animals, the clinical use of these substances has been somewhat disappointing, except perhaps the use of theelin in the treatment of gonococcal vaginitis in young children. The proper sphere of their usefulness in gynecologic therapy

remains to be determined. Certain it is that the extensive routine use of these hormone preparations, for the present at least, is not warranted. An appraisal of the present status of knowledge of the estrogenic substances was recently set forth in *THE JOURNAL*.²

An unexpected difficulty, not encountered in this field except as a rarity, arose in connection with the use of extracts of the parathyroid hormone which have recently been prepared in a form suitable for both experimental and clinical use. It was found that with the repeated injection of such extracts both human beings and dogs developed an immunity and did not react to the later injections. Hence it would seem advisable for the present to employ the hormone therapy only as a last resort and use calcium medication as far as possible. An explanation for this immunity effect is not yet available. Whether the reaction is a characteristic of the hormone itself or whether it is provoked by a product formed during the somewhat drastic treatment to which the glandular material is subjected in the course of the preparation of the extract will have to be determined as further progress is made in the biochemistry of this endocrine structure.

There is a factor in experimentation the significance of which is all too frequently overlooked. Despite the well recognized value and need of anesthesia in research work, there are, none the less, certain types of experiments which are vitiated by the use of narcotics, and in this class must be placed nearly every endocrine product. A good example is furnished by the posterior pituitary extracts, notably the pressor fraction, pitressin, some of the characteristic reactions as well as toxic dose of which are markedly altered in the presence of an anesthetic, especially the barbiturates. The marked effect on the metabolism especially of the carbohydrates, produced so frequently by endocrine preparations, cannot be studied in an anesthetized subject, whose metabolism, as is well known, is greatly altered under such conditions. Hence, in animal experiments the object of which is to determine the physiologic response to certain of the endocrine drugs, anesthetics are to be avoided. Fortunately, such procedures can be carried out with no considerable discomfort to the experimental subject, since the effects that are produced are not painful. After all, work of this sort is only preliminary to the adoption of similar procedures in human subjects.

In view of what has just been said, too much emphasis cannot be placed on the need of the most rigorous control of all experimentation in this field. May I repeat that the examples given were chosen without any critical intent whatever, from among many equally striking and illustrative of the points which I wished to discuss; hence the omission of specific references in most cases. The illustrations were used merely in exemplification of the fact that there are many snares which await the researcher in this complex and difficult branch of learning. In conclusion, then, let us, in science at least, use the mistakes of the past to furnish the light for a clearer vision into and a more certain attack on the many unsolved problems in this fascinating and untrampled field of knowledge, the gates of which we have barely passed.

"Study the past if you would divine the future" (Confucius).

1. Frank, R. T.: *The Female Sex Hormone*, Springfield, Ill., Charles C. Thomas, 1929, p. 275.

2. *Estrogenic Substances*: Theelin, J. A. M. A. **100**:1331 (April 29) 1935.

ENDEMIC CEREBROSPINAL FEVER IN CHILDHOOD

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AND

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Infections of the central nervous system in childhood present a fascinating part of pediatric practice. Among these, cerebrospinal fever is of especial interest in that it constitutes an acute medical condition not unlike the acute surgical emergencies.

During epidemics of the disease, when apprehension stimulates diagnostic acuity, early forms of infection are recognized which are commonly believed to characterize the epidemic form. Although Herrick,¹ Netter and Salanier² and others stated that sporadic cases frequently reveal typical early symptoms, the diagnosis in these cases is commonly not made until evidences of meningitis appear. Many observers accordingly describe an experience with sporadic cases which is limited mostly to the meningitic stage and restrict discussion to this stage of final localization.

eight cases, or 62 per cent, and this number includes only those in which the rash was present at entry. The coincident infection of the blood stream was frequently but not invariably confirmed bacteriologically.

Most of these cases are to be regarded as sporadic. They were scattered through a ten year period, during which a moderate increase in local incidence was encountered only in 1929. This unusual incidence of septic signs characterizes the cases of this series as of uncommon severity, but is also significant of the fact that, owing to emphasis on slight central nervous system signs engendered by the poliomyelitis epidemics of 1925, 1927 and 1930, we were enabled to see many of the cases at a relatively early period of infection. The distribution of the children according to age was as follows: up to 1 year of age, twelve children; from 1 to 2 years, nine; from 2 to 5 years, fourteen; from 5 to 10 years, twelve; from 10 to 16 years, eleven. There were thirty-five boys and twenty-three girls, making a total of fifty-eight.

These children were closely followed clinically, almost all of the recorded observations being made by one of us. They were examined shortly after entry and repeatedly daily throughout their active course. A

TABLE 1.—Classification of Fifty-Eight Cases of Cerebrospinal Fever

Type of Case	No. of Cases	Per Cent	Systemic Signs	Central Nervous System Examination	Meningococci Source	Treatment
I. Sepsis.....	4	7.0+	Petechiae; toxemia; little or no stiffness of neck	Little or no increase in cells of spinal fluid	Blood; petechiae	Intravenous
II. Sepsis with early meningitis	10	17.4	Petechiae; toxemia; beginning stiffness of neck	Low cell count; clear fluid or ground glass	Blood; petechiae; in spinal fluid only occasionally	Intravenous; intraspinal
III. Sepsis with fulminant meningitis	5	8.6	Petechiae; toxemia; early, little or no stiffness of neck	A clear fluid followed in a few hours by purulent fluid	Blood; petechiae; in spinal fluid late	Intravenous; intraspinal
IV. Sepsis with advanced meningitis	18	31.0	Petechiae; toxemia; very stiff neck	Purulent spinal fluid	Blood; petechiae; spinal fluid	Intravenous; intraspinal
V. Meningitis with little or no sepsis	21	36.0	Few or no petechiae; varying toxemia; marked meningeal signs	Purulent spinal fluid	Spinal fluid; rarely from blood	Intraspinal

A series of fifty-eight consecutive cases of cerebrospinal fever in children admitted to the Children's Hospital, San Francisco, during the past ten years, presents unusual prominence of signs of systemic invasion, especially evidenced by signs of general intoxication and the presence of a diffuse purpuric eruption. In the studies of large series of sporadic cases reported by Neal, Jackson and Appelbaum,³ McLean and Caffey,⁴ McKhann⁵ and others, the typical rash has been observed in from 6 to 15 per cent of the cases. In the epidemic series studied by Smithburn and co-workers,⁶ petechiae occurred in 69 per cent. In the present series, typical eruptions were present in thirty-six of fifty-

detailed résumé of the results of the examinations is not presented, but we have sought to group the cases in such a manner as to illustrate phases in the progress of infection and the significance of clinical signs, and to suggest the mechanism of the pathogenesis and a theory of treatment.

The disease is believed to originate in the respiratory tract, to be disseminated by way of the circulation and finally to localize in serous membranes, usually the meninges. So variable is the duration of each stage that it is impossible to group cases thus with regard to the time which elapsed from the appearance of the first symptom to the date of entry to the hospital. (It may be noted that in the different groups, however, arrangement is made with regard to duration.)

It is likewise impossible to do more than mention the respiratory symptoms of early infection. These symptoms can seldom be recognized except in large epidemics, until subsequent developments make their nature evident. Many of these children presented a history or signs of respiratory infection antecedent to or accompanying their status at entrance. Many of them had rhinitis, pharyngitis, tonsillitis, otitis media, sinusitis or pneumonia before characteristic symptoms developed. In general, the respiratory symptoms which were almost unquestionably part of the disease were of minor nature. The manner in which such mild local infection could be responsible for the tremendous infes-

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Owing to lack of space, this article has been abbreviated by the omission of the reports of cases 4, 7, 8, 9, 10, 12, 13, 15 and 19. The complete article will appear in the Transactions of the Section on Pediatrics and in the authors' reprints.

1. Herrick, W. W., in *Oxford Medicine*, New York, Oxford Univ. Press, 1932, vol. 5, pp. 71-105.

2. Netter, A., and Salanier, M.: *Comp. rend. Soc. de biol.* 79: 670 and 973, 1916.

3. Neal, Josephine B.; Jackson, H. W., and Appelbaum, E.: *Epidemic Meningitis: Study of More Than Six Hundred and Fifty Cases, with Especial Reference to Sequelae*. J. A. M. A. 57: 1992 (Dec. 11) 1926.

4. McLean, S., and Caffey, J.: *Endemic Purpuric Meningococcus Bacteremia in Early Life: The Diagnostic Value of Smears from the Purpuric Lesions*, Am. J. Dis. Child. 42: 1053 (Nov.) 1931.

5. McKhann, C. F.: *New England J. Med.* 202: 520 (March 13) 1930.

6. Smithburn, K. C.; Kempf, G. F.; Zerfas, L. G., and Gilman, L. H.: *Meningococci Meningitis: A Clinical Study of One Hundred and Forty-Four Epidemic Cases*, J. A. M. A. 95: 776 (Sept. 13) 1930.

tation of the blood stream is a matter of great interest and importance.

The cases were grouped into five groups with regard to observations made at entry (table 1). This grouping consists of (1) uncomplicated sepsis; (2) sepsis with very early meningitis; (3) sepsis with fulminant meningitis; (4) sepsis with advanced meningitis, and (5) late meningitis without evidence of sepsis. The evidence of sepsis consisted of a picture of severe, often fulminant, infection, general signs apart from those associated with meningitis and the characteristic rash. Localization was characterized by the usual signs of meningitis. No

serum therapy, and meningitis did not develop. One died, without infection of the meninges, before treatment could be given. In none did meningeal localization occur following intravenous therapy.

The second group (table 3) comprises ten children who were treated at a little later stage than the children in the first group. These patients uniformly presented a rash of hemorrhagic character and in addition showed slight and variable meningeal irritative signs. In only the first patient were organisms demonstrated in spinal fluid withdrawn at entry, and cell counts of this fluid were equivocally low.

TABLE 2.—Data in Group I: Sepsis Without Meningitis

Case	Age	Symptoms and Signs				Blood			Spinal Fluid			Treatment		Outcome
		Duration	Fever, F.	Petechiae	Stiffness of Neck	White Blood Count	Poly-morpho-nuclears	Men-ingo-cocci	Cells	Poly-morpho-nuclears	Men-ingo-cocci	Intra-venous	Intra-spinal	
1	7 yrs.	6 hrs.	103.0	+++	0	22,000	87	+	21	..	..	+	0	Recovered
2	10 yrs.	11 hrs.	106.0	+++	+	26,350	89	0	16	12	0	+	0	Recovered
3	2½ mos.	3 days	103.0	+++	0	9,050	52	+	5	..	..	+	0	Recovered
4	10 mos.	2 wks.	98.8	+++	0	29,000	60	+	4	..	..	..	..	Died

marked demarcation exists between the groups, and they constitute a steady gradation from early sepsis to late meningitis.

The first group (table 2) consists of four children who presented symptoms of sepsis and in whom meningitis did not develop. They presented marked prostration and rapidly progressing signs of sepsis associated with a petechial eruption which was diagnostic. Slight meningeal irritative signs were usually present, but lumbar puncture revealed an essentially normal fluid in which organisms were not found on smear or on culture. In the first case the diagnosis was entirely clin-

Most of the children in this group presented possibilities for earlier recognition of the condition, which, but for slight delay before entry, might have been recognized and treatment given before meningeal localization occurred. In all but three the conventional method of treating first intraspinally and later intravenously was employed. The exceptions were the patient in case 4, who was treated intravenously because of the picture of fulminant sepsis but who promptly died; the patient in case 7, with congenital syphilis, who was first treated intravenously, and who subsequently showed a slight cellular increase and the presence of

TABLE 3.—Data in Group II: Sepsis with Early Meningitis

Case	Age	Symptoms and Signs				Blood			Spinal Fluid			Treatment		Outcome
		Duration	Fever, F.	Petechiae	Stiffness of Neck	White Blood Count	Poly-morpho-nuclears	Men-ingo-cocci	Cells	Poly-morpho-nuclears	Men-ingo-cocci	Intra-venous	Intra-spinal	
5	2½ yrs.	12 hrs.	103.0	+++	0	47,000	..	+	37	42	+	+	0	Died in 1 hr.
6	5 yrs.	12 hrs.	101.0	+	+	15,600	75	0	290*	13	0*	+	+	Recovered
									2,500		+			
7	4½ yrs.	14 hrs.	103.0	+	+ sl.	45,000	90	0	90	70	0	+	+	Recovered, syphilis
									414		+			
8	13 yrs.	2 days	103.4	0	+	15,950	84	0	7 flaky	..	0	0	+	Died; paralysis
									4,000		+			
9	11 yrs.	2 hrs.	+	+	++	12,250	79	0	162	95	0	0	+	Died of accident
									5,400		+			
10	11 yrs.	2 days	101.2	++	+	6,800	84	0	266	90	0	+	+	Recovered
									8,640		+			
11	7 yrs.	3 days	104.0	+++	+	30,450	88	0	35 flaky	66	0	+	+	Recovered
									Turbid		+			
12	7 yrs.	3 days	101.0	+	+	16,500	84	0	272	84	0	0	+	Recovered
									Turbid		+			
13	8 mos.	3 days	97.8	+++	++	19,450	78	0	560	..	0	+	+	Died; tuberculous meningitis
									Turbid		+			
14	5 yrs.	4 days	101.5	++	0	9,650	74	0	140	74	0	0	+	Died; tuberculous meningitis
									773		+			

* First puncture.
Second puncture.

ical, but in the others the diagnosis was confirmed by laboratory methods. (Three similar cases, our only omissions, were omitted because of equivocal evidence.) These cases were all severe, but the degree of urgency for treatment varied. The clinical evidence was so characteristic in all as to make it unnecessary to secure bacteriologic confirmation before treatment was initiated. Three patients, including an infant of 2½ months, recovered promptly following intravenous

organisms in the spinal fluid, but required little intraspinal treatment, and the patient in case 10, who was treated intravenously a few hours before he was treated intraspinally and who recovered after numerous treatments. The question arises if initial therapeutic efforts should not have been directed toward combating the sepsis. Following intravenous treatment, septic signs promptly regressed and rashes quickly faded, but when serum was introduced intrathecally before there was

demonstrable infection of this tract, there was rapid cellular increase and progressive meningeal infection. In two of these cases there was coincident tuberculous meningitis, both organisms being positively demonstrated; in one there was associated syphilis of the central nervous system, and the first patient was a mental defective. Five of the ten children died. One death occurred so promptly as to be uninfluenced by

blood culture. The severity of illness seemed clinically more attributable to the sepsis than to the meningitis. This is illustrated by the patient in case 25, who was desperately ill but who improved strikingly following intravenous administration of serum as an initial procedure and subsequently recovered following a series of intraspinal treatments. Nearly all of these children were treated intravenously (usually only once) and

TABLE 4.—Data in Group III: Sepsis with Fulminant Meningitis

Case	Age	Duration	Symptoms and Signs			Blood			Spinal Fluid			Treatment		Outcome
			Fever, F.	Petechiae	Stiffness of Neck	White Blood Count	Poly-morpho-nuclears	Men-ingo-cocci	Cells	Poly-morpho-nuclears	Men-ingo-cocci	Intra-venous	Intra-spinal	
15	14 mos.	8 hrs.	104.5	+++	+ sl.	17,100	70	0	13* 8,000	+	0*	+	+	Died
16	18 mos.	12 hrs.	+	++	+ sl.	15,600	44	0	0 7,000	+	+	+	+	Died
17	18 mos.	18 hrs.	+	+++	+	14,000	74	0	0 2,100	+	0	+	+	Recovered
18	4 yrs.	18 hrs.	102.6	+	+ sl.	40,800	88	0	4 8,000	+	0	+	0	Died
19	12 yrs.	24 hrs.	101.0	++	+	.....	..	..	80 1,500	..	0	+	+	Died

* Puncture few hours before entry.
Puncture after entry.

treatment; two deaths were due to associated tuberculosis, and in one case a fatal outcome was caused by the production of abrupt pressure changes due to intra-spinal treatment. The third group (table 4) consists of five children with similar cases on whom, on clinical evidence obtained prior to entry, punctures had been performed which revealed fluids negative for cells and organisms, and who were admitted only a few hours later showing marked and characteristic eruptions and profound evidence of meningitis. Four of the five quickly succumbed. These cases must have presented over a

intrapically. Six of the eighteen died, but four deaths were definitely not due to ineffective treatment; one child was dying on entry; one died in one hour; one died of infection of the flat bones of the face with staphylococcus septicemia after virtual recovery from meningitis, and one had severe congenital heart disease and a probable associated tuberculosis. The fifth group (table 6) is made up of children with advanced meningitis in whom sepsis was not clinically evident. Many, however, had a history of antecedent rashes. The first half of the group (A) had symptoms of less than one week's duration, and these eleven

TABLE 5.—Data in Group IV: Sepsis with Advanced Meningitis

Case	Age	Duration	Symptoms and Signs			Blood		Spinal Fluid			Treatment		Outcome
			Fever, F.	Petechiae	Stiffness of Neck	White Blood Count	Poly-morpho-nuclears	Cells	Poly-morpho-nuclears	Men-ingo-cocci	Intra-venous	Intra-spinal	
20	4 yrs.	14 hrs.	105.0	+++	.....	.....	..	9,000	+	+	+	+	Died
21	5½ yrs.	15 hrs.	105.0	++	+ sl.	.....	..	9,480	89	+	+	0	Died in 1 hr.
22	2 yrs.	1 day	105.0	++	+++	13,700	78	1,148	93	+	+	+	Recovered
23	14 yrs.	1 day	104.5	++	+	13,000	95	+++	+	+	+	+	Died (staphylococcus sepsis)
24	3 yrs.	1 day	104.0	+	+	8,250	60	2,304	98	+	+	+	Recovered
25	3 yrs.	1 day	104.0	+++	+	6,850	77	12,800	+	+	+	+	Recovered
26	9 yrs.	1 day	99.8	++	+	15,000	70	+++	+	+	+	+	Recovered
27	2½ yrs.	1½ days	+	+	+	31,000	89	10,300	98	+	+	+	Recovered
28	3 yrs.	2 days	104.0	++	+	37,000	93	+++	+	+	+	+	Recovered
29	9 yrs.	2 days	+	++	+	.....	..	3,404	97	+	..	..	Died (on entry)
30	8 yrs.	2 days	104.0	+	+	24,000	88	8,250	98	+	+	+	Died of accident
31	11 yrs.	3 days	103.0	+	++	14,000	64	+++	+	+	0	+	Recovered
32	6½ yrs.	3 days	104.0	++	+	17,500	64	10,000	91	+	+	+	Recovered
33	3½ yrs.	3 days	103.0	+++	+	19,300	78	1,032	92	+	+	+	Recovered
34	18 mos.	4 days	104.0	+++	+	12,200	73	7,200	96	+	+	+	Recovered
35	2 yrs.	4 days	104.0	++	+++	14,900	69	1,680	59	+	0	+	Recovered
36	12 yrs.	5 days	103.0	+++	+	16,600	66	1,655	97	+	+	+	Died (congenital heart disease)
37	13 mos.	7 days	103.4	+	+	20,900	72	+++	+	+	+	+	Recovered

period of hours an opportunity for clinical recognition and perhaps the possibility of treatment in the septic stage. They emphasize the rapidity of progression and the necessity of immediate diagnosis and treatment as the only method of combating their exceedingly fulminant nature. The fourth group (table 5) carries the infection a little further. These children presented evidence of meningitis, but active sepsis was indicated by fresh or advancing rashes. Sepsis was frequently confirmed by

infants include nine in whom the characteristically equivocal picture in infancy was presented. This age group accounts for a high mortality. The last half of this group (B) includes cases of a duration of from one to six weeks. Several of these (cases 52, 55 and 58) with antecedent low cell counts had been diagnosed tuberculous meningitis, and recovery followed correct diagnosis and treatment. The mortality in this group is high, but this mortality is hardly the measure of the penalty for late diagnosis.

If any comparison can be drawn between these cases and those in which diagnosis was made early, it would appear that for children in such a group to have survived to a late stage others must have succumbed from fulminant early infection.

COMMENT

This series of cases reveals a gradation of infection from the almost unnoticeable stage of respiratory origin, through a stage of dissemination with characteristic symptoms which in time becomes combined with varying grades of meningeal localization and finally results in the typical picture of late meningitis without sepsis. The series illustrates the statement that meningitis does not necessarily dominate the picture of cerebrospinal fever even in the notably atypical cases in childhood. It justifies some comment on diagnosis, pathology and treatment.

The white blood counts in these patients usually showed considerable or tremendous increase, but this was not universal. Some of them showed an actual leukopenia.

Bacteriologic diagnosis is, of course, highly desirable, but it should be vigorously stated that in the presence of positive clinical evidence treatment should not be delayed until a bacteriologic report is made. In eight of the sixteen fatal cases in the groups showing petechiae, bacteriologic diagnosis was returned only after the patient was dead.

So great is the infestation of the blood stream that organisms can often be found in the direct blood smears (Coles,⁷ plate I). Smears from petechial punctures are often positive (McLean and Caffey,⁴ and Netter and Salanier²). Blood cultures are often positive in the septic stage, depending somewhat on the technic. Nasopharyngeal cultures are often positive.

TABLE 6.—Data in Group V: Advanced Meningitis with Little or No Sepsis

Case	Age	Symptoms and Signs				Blood		Spinal Fluid			Treatment		Outcome
		Duration	Fever, F.	Petechiae	Stiffness of Neck	White Blood Count	Poly-morpho-nuclears	Cells	Poly-morpho-nuclears	Meningo-cocci	Intra-venous	Intra-spinal	
A. Symptoms of Less Than One Week's Duration													
38	13 mos.	1 day	104.0	0	+	21,000	63	8,000	95	+	+	+	Died
39	9 mos.	1½ days	100.0	0	+	15,800	69	+++	+	+	+	+	Recovered
40	3 mos.	2 days	103.0	0	+	31,600	90	14,500	+	+	+	+	Died
41	16 mos.	2 days	102.6	0	+	10,500	66	+++	+	+	+	+	Died
42	5 yrs.	2 days	105.0	0	+	26,000	75	1,300	+	+	+	+	Recovered
43	11 mos.	2 days	102.0	0	+	26,000	77	8,000	+	+	+	+	Died
44	20 mos.	2 days	103.6	0	+	13,000	58	+++	+	+	+	+	Recovered
45	7 mos.	4 days	102.4	0	+	22,400	65	4,350	+	+	+	+	Recovered
46	14 mos.	4 days	+	0	+	8,250	85	620	15	+	+	+	Died; influenza meningitis
47	9 mos.	6 days	103.4	0	+	20,000	77	450	16	+	+	+	Died
48	14 yrs.	7 days	102.0	0	+	22,000	84	+++	+	+	+	+	Died
B. Symptoms of From One to Six Weeks' Duration													
49	9 yrs.	8 days	+	0	+	31,600	90	1,450	+	+	0	+	Died
50	2 yrs.	2 wks.	100.0	0	+	7,400	70	415	96	+	0	+	Died
								1,460					
51	7 mos.	2 wks.	101.0	0	+	36,000	73	+++	+	+	0	+	Died
52	3½ yrs.	2½ wks.	102.0	0	++	16,000	95	4,500*	97	+	0	+	Recovered
53	8 yrs.	3 wks.	98.6	0	+	7,100	68	1,100	90	+	+	+	Recovered
54	12 mos.	3 wks.	99.6	0	+	16,400	84	+++	+	+	0	+	Died; moribund at entry
55	9 yrs.	3 wks.	102.0	0	+++	11,000	71	3,225*	40	+	0	+	Recovered
56	16 yrs.	4 wks.	100.2	0	+	15,000	59	1,792	+	+	0	+	Died (tuberculous)
57	4½ yrs.	5 wks.	104.0	0	0	10,900	41	+++	+	+	0	+	Recovered
58	4 yrs.	6 wks.	100.0	0	+	27,800	80	484*	41	+	0	+	Recovered
								620					

* Previous cell counts low.

DIAGNOSIS

It will be noted that the presence of a hemorrhagic eruption was considered of great importance to the diagnosis and classification of these cases. Macular, papular and vesicular rashes were present in a few, but the characteristic petechial rash was observed after entry in thirty-six of the fifty-eight cases. The absence of the eruption has little negative value (as against the diagnosis), but its presence in an obscure, severe, febrile illness reveals strongly positive evidence of the nature of the pathogen. In the presence of evidence of meningeal infection, this eruption is highly diagnostic and raises the question of the desirability of combating the sepsis. Other somewhat similar rashes are not particularly hard to differentiate in conjunction with the general picture.

The absence of clinically perceptible splenomegaly is a point of some differential value: The spleen rapidly enlarges in childhood in response to sepsis; but in these cases, where it was carefully noted, the spleens were consistently not palpable, being enlarged only when there was some other cause.

In the meningitic stage, the spinal fluid usually shows many pus cells. This series illustrates the fact that (Smithburn and co-workers⁶) too much reliance must not be placed on a negative or equivocal spinal fluid. Cell counts may be low and the fluid fail to reveal organisms, particularly in the very early and very late cases.

Diagnosis in infancy presents a distinct and difficult problem. All signs and symptoms may be equivocal. Marked signs of sepsis occasionally occur but are admittedly rare. Meningeal signs are frequently difficult to detect. The atypical nature of the picture in infancy is reflected in the late stage at which the disease is recognized and in the unsatisfactory course and outcome of treatment.

In general, it may be stated that, like most medical and surgical emergencies, the diagnosis of cerebrospinal fever is made on all available positive clinical and laboratory evidence. Too much reliance must not be placed on negative evidence, and the clinician must be

7. Coles, A. C.: Cerebrospinal Meningitis: Meningococci Found in Peripheral Blood Films, *Lancet* 1: 750 and 1046, 1915.

prepared to proceed with therapy on the basis, oftentimes, of fragmentary evidence, a certain amount of interdictivity being rewarded in the outcome.

PATHOLOGY

The progress of these cases through the varying stages of infection presents many interesting possibilities for speculation regarding the pathologic physiology. Evidence is fairly conclusive that entrance to the body is by way of the respiratory tract. This is succeeded by a degree of infestation of the blood stream scarcely equaled by any other bacterial infection, which in turn is followed by localization of the organism in the skin and in serous membranes of the body. How does this profound invasion of the blood stream occur, and how do the organisms produce the rapid infection of serous cavities? An answer is suggested by study of these gradations in the infectious picture.

1. The original focus of infection is usually of minor nature, although it is sometimes grossly evident (Westenhoeffer⁸). Actual empyema of the antrums of the ethmoid sinuses is described, but is not the rule. We have not seen nor found described such local changes in the vessels, thrombosis or phlebitis of larger veins from which dissemination of infected emboli might result in the usual manner of production of a sepsis; nor are secondary disseminating foci, such as heart valves, the rule.

2. When the organisms are seen free in blood smears, they are found within cells or free in the plasma and do not appear in bacterial clumps or enmeshed in fibrin.

3. The areas of skin localization present significant information. Bittorf⁹ attempted an explanation of their production by the blocking of arterioles by infected emboli. The opinions, however, of Benda,¹⁰ Gruber,¹¹ and Herrick,¹ and in particular the illustrations of petechial sections presented by Pick,¹² strongly support the view that they are produced by a toxic effect on the arteriole wall. Thomsen and Wulff,¹³ and Brown¹⁴ and Renault and Cain¹⁵ stated that an effect on the arteriole and capillary walls causes desquamation of the endothelial cells and thus permits the escape of cells and organisms, the organisms being found free, or in the endothelial or polymorphonuclear cells.

The marked skin eruptions tend spontaneously to regress, and following intravenous treatment they quickly and almost entirely disappear. This is almost irreconcilable with an embolic theory or any mode of origin other than their production by a vascular toxin which may be neutralized by an antitoxic effect of serum. The rash seems thus to resemble more the exanthem of scarlet fever than the petechiae of subacute bacterial endocarditis.

4. In meningeal localization areas of perivascular inflammation first appear which are not unlike the early changes in the skin. Westenhoeffer⁸ described hemorrhages of the pia-arachnoid as an early change but ascribed them to pressure changes dependent on lumbar puncture. It may be noted in this series that slight signs and symptoms of meningeal irritation sometimes accompanied the stage of sepsis even when meningitis did not develop. Cells appear in the spinal fluid before

organisms can be found, and in certain of these cases, and in some reported by Netter,¹⁶ the cells were at first lymphocytes. The original meningeal reaction is therefore in the nature of meningismus dependent on vascular changes rather than a response to bacterial infection of the spinal fluid. Herrick described just such early changes in the joints, which sometimes spontaneously regress but sometimes proceed to definite infection.

The evidence seems fairly convincing that the manner in which the organism gains unimpeded entrance to the blood and thereafter affects distant tissues depends on the action of an exotoxin or endotoxin which produces vascular damage of such a nature as to permit this massive ingress from a small original focus and in a similar manner permits egress to the tissues. This hypothesis of the disease mechanism is presented in consonance with the increasing interest in the nature of meningococcus toxins evidenced by the reports of Gordon,¹⁷ Schwartzman¹⁸ and Sickles.¹⁹ Investigations of these toxins can hardly fail in the future to influence the theory of treatment.

TREATMENT

The results in this series of cases can scarcely be cited as demonstrating unusually successful therapy, but our observations suggest certain methods of procedure in these different phases of infection.

Group I.—There can be no question that in order for patients in the septic stage to be treated successfully they must be promptly treated on the basis of evidence that is largely clinical. Serum should be given intravenously in fairly large dosage. Reactions to intravenous therapy have not been alarmingly out of proportion to the seriousness of the infection. Injection of dextrose solutions prior to the administration of serum seems to aid in the prevention of serum reactions and is appealing for many reasons. We have not seen or encountered infection of the meninges subsequent to intravenous injections of serum when initially evidence of such involvement was lacking.

Many good observers refuse to employ serum in the treatment of meningitis, believing it to be ineffective. The evidence of the specific value of serum is much more convincing when the infection is combated in the stage of uncomplicated sepsis than in the stage of meningitis. This is consistent with the view that neutralization of toxins rather than bactericidal action is the desired effect of intravenous treatment.

Group II.—It is our opinion that if cases can be distinguished at a stage in which there is manifest sepsis but in which evidence of meningeal infection is minimal (limited to changes which may be produced by meningeal vascular reaction) that serum should first be given intravenously. At this time all of the areas of infection may be accessible to treatment by way of the circulation, and the effect of producing, by the irritating action of serum, an intense cellular response may be positively adverse.²⁰ After the lapse of a few hours the spinal fluid may be reexamined and the desirability of the intrathecal administration of serum considered. In this series and in cases reported by Netter,² in which serum

8. Westenhoeffer, M.: *Berl. klin. Wchnschr.* 42: 737, 1905.

9. Bittorf, A.: *Deutsche med. Wchnschr.* 41: 1085, 1915.

10. Benda, C.: *Berl. klin. Wchnschr.* 53: 449 (April 24) 1916.

11. Gruber, G. B.: *Deutsches Arch. f. klin. Med.* 117: 250, 1914-1915.

12. Pick, L.: *Deutsche med. Wchnschr.* 42: 994 (Aug. 17) 1916.

13. Thomsen, O., and Wulff, F.: *Comp. rend. Soc. de biol.* 83: 701, 1920.

14. Brown, C. L.: *The Skin Lesions in Meningococcus Septicemia*, *Am. J. Dis. Child.* 27: 598 (June) 1924.

15. Renault, J., and Cain, A.: *Ann. de méd.* 7: 114, 1920.

16. Netter, quoted by Neal.³

17. Gordon, M. H.: *A Method of Extracting Endotoxin for the Purpose of Standardizing Antimeningococcus Serum*, *Brit. M. J.* 1: 110 (Jan. 26) 1918.

18. Schwartzman, G.: *Local Skin Reactivity to Bacterial Filtrates: A Method of Standardizing Antimeningococcus Reacting Factors*, *J. Clin. Invest.* 2: 511 (Nov.-Dec.) 1932.

19. Sickles, G. M.: *Am. J. Hyg.* 17: 412-431 (March) 1933.

20. Blackfan, K. D.: *Medicine* 1: 139 (May) 1922.

was given intraspinally before meningitis was demonstrable, it definitely did not prevent the progressive development of meningitis, even though from the standpoint of bacteriolytic effect such a method would seem ideal.

Groups III and IV.—In cases of either fulminant or early meningitis accompanying pronounced sepsis, serum may be given intraspinally without delay. Coincident use of intravenous therapy is discredited by many but seems logical and likewise has the support of many good observers. In a few of our cases improvement seemed strikingly to follow intravenous therapy.

Group V.—Intraspinal treatment should be used in the cases of meningitis in this group. In many of these cases the septic phase has passed, and the utility of intravenous treatment may be questioned. It must be remembered that infants characteristically manifest little signs of the septic stage, stand the disease poorly and withstand intravenous injections of serum well. It is not unreasonable to give them a single dose of serum into the vein.

SUMMARY

This series consists of fifty-eight consecutive cases of cerebrospinal fever in childhood occurring during a ten year period. An atypically high incidence of signs of systemic invasion characterizes the series. These signs, particularly the eruption which was present in 62 per cent of the patients, were of great importance in the diagnosis. The cases are grouped so as to show progressive phases of infection.

A study of this series and an analysis of the observations of others strongly suggests that vascular damage produced by meningococcus toxins is responsible for the eruption and many of the manifestations of the infection and permits the characteristic blood stream infestation and the dissemination of the organisms.

Successful therapy should proceed from recognition of signs apart from those of meningitis and must be designed first to combat the intoxication and secondarily to attack the organisms more directly.

SUMMARY OF CASES

Group I: Sepsis without Meningitis (table 2).—CASE 1.—B. C., a boy, aged 7 years, was seen in January, 1929. Two brothers of the patient were admitted to the hospital two days previously with meningitis. Six hours before the patient was admitted he complained of headache and vomited, and a rash appeared. On entry there were no meningeal signs. He was covered with a rash composed of fine, pinkish macules, larger papules, petechiae and larger purpuric spots. He was promptly treated intravenously and completely recovered after two injections of serum at intervals of twenty-four hours. Most of the rash disappeared a few hours after the first treatment, and only a few small stains, far less numerous than the petechiae, persisted. The spinal fluid remained negative for cellular increase or organisms. The blood and nasopharyngeal cultures were positive for meningococci.

CASE 2.—L. M., seen in June, 1925, entered the hospital nearly moribund with a diagnosis of meningitis made on the presence of high fever, slight stiffness of the neck and delirium. Lumbar puncture showed a negative fluid. After the puncture, it was noted that a few petechial spots on the abdomen were augmented by numerous similar ones which appeared all over the body and were especially marked in the eyelids. Some ecchymoses several centimeters in diameter appeared in the course of two or three hours. The patient was promptly treated with serum injected intravenously, which treatment was repeated on two successive days. He recovered without intraspinal treatment. Most of the spots disappeared overnight. A blood culture was unfortunately taken after the first treatment, and all cultures remained negative.

CASE 3.—W. L., a boy, aged 2½ months, seen in February, 1933, became suddenly ill and emitted one shrill and noticeably abnormal cry. The temperature was 104 F. On admission to hospital, physical examination gave negative results. After two days of elevated temperature, a blood culture, taken at entry, was returned positive for meningococci, and at this time reexamination of earlier blood smears showed meningococci. The child was first treated the following day with 6 cc. of concentrated serum given intramuscularly, and was then referred to us. At this time he showed many petechiae and a few larger spots. He was treated with 15, 15 and 10 cc. of serum injected intravenously on three successive days. Most of the eruption had disappeared in twenty-four hours after the first treatment, and recovery was uneventful. Repeated spinal and cistern punctures were negative. The only residue of infection was a contracture of the hamstring tendons on one side, which was probably due to the intramuscular injection of serum.

Group II: Sepsis with Early Meningitis (table 3).—CASE 5.—L. L., a boy, aged 2½ years, seen in December, 1928, seemed slightly ill all the day of entry but was seen (by a nurse) at 4 p. m., at which time his temperature was normal. A rash and fever were observed about 8 p. m., and he was admitted to the hospital at about 10 p. m. with a temperature of 103 F., covered with a typical eruption and nearly moribund. He was promptly treated, but died less than one hour after entry. Meningococci were found in smears of venous blood and in blood culture. The postmortem spinal puncture showed a clear fluid with 37 cells per cubic millimeter which, however, contained organisms on smear and on culture.

CASE 6.—R. L., a boy, aged 5 years, seen in October, 1931, had symptoms of illness for twelve hours, fever, nausea and vomiting, headache and slight retraction of the neck. He was admitted to the hospital with a diagnosis of poliomyelitis. There were many petechiae on the trunk and extremities and a few on the hard palate. Spinal fluid at entry was clear and contained 290 cells per cubic millimeter, of which 13 per cent were polymorphonuclears. Smear and culture of this fluid were negative for organisms. The child recovered after treatment into the spine and vein. The cell count of the spinal fluid on the second day was 2,500, and organisms were present on smears.

CASE 11.—R. R., a boy, aged 7 years, seen in October, 1931, awoke from sleep three days before entry to the hospital with symptoms of nausea and vomiting which persisted to the time of entry. For twenty-four hours before he was semiconscious. There was marked stiffness of the neck; a small patch of pneumonia was present, and a few scattered petechiae were observed with some larger ecchymoses over the buttocks. A diagnosis of meningitis was made, and lumbar puncture showed a cloudy fluid which contained many fibrin flakes but only 35 cells per cubic millimeter. Organisms were absent on smear and on culture. Treatment was first given intraspinally followed by the intravenous administration of serum after a few hours. The next morning the fluid was purulent and contained many meningococci. The child recovered after a stormy course and many treatments.

CASE 14.—G. C., a girl, aged 5 years, seen in November, 1931, had had nausea, pain in the abdomen and fever for four days. She was admitted to the hospital because of many petechiae which were scattered over her body and extremities. There were almost no meningeal signs. The spinal fluid contained 140 cells, 74 per cent polymorphonuclears, and organisms were not found on smear or on culture. She was markedly sensitive to serum and was treated only intraspinally, a serum being used which later proved to be strongly agglutinative for her organisms. Improvement was rapid until the sixth day, when progressive signs resembling tuberculous meningitis developed. A tuberculin test was positive at this time. The course became progressively worse; many new petechiae and widespread ecchymoses appeared, and a loud systolic heart murmur was heard for the first time. Meningococci were found in blood culture and in petechial puncture smears. The patient died despite an intravenous dose of serum. Autopsy showed milary tuberculosis, caseous hilus glands, acute hemorrhagic endocarditis and coincident tuberculous and

meningococcus meningitis. Cultures of the spinal fluid were positive for meningococci, and guinea-pig inoculation showed tuberculosis.

Group III: Sepsis with Fulminant Meningitis (table 4).—**CASE 16.**—R. M., a girl, aged 18 months, seen in January, 1933, twenty hours before entry to the hospital fell from a chair and was apparently uninjured. One and one-half hours later fever developed. Twelve hours before entry the child became cold and blue; her eyes rolled back, and she was stiff. A spinal puncture at another institution was negative, and she was allowed to go to her home. There she was seen by another physician. A diagnosis of pneumonia was made and she was sent to the general hospital. At this time many petechiae were observed, which rapidly increased in number and extent; purpuric spots as large as 0.5 cm. were later observed. The patient was transferred, after an interval, to the communicable disease department and was treated intravenously, then after four hours intraspinally, but died shortly thereafter. Meningococci were present in the blood and spinal fluid. The spinal fluid contained 1,700 cells per cubic millimeter.

CASE 17.—C. R., a girl, aged 18 months, seen in February, 1932, eighteen hours before entry to the hospital was restless and convulsive. About ten hours later, following a convulsion, a lumbar puncture at another institution was said to have shown a normal spinal fluid. On admission, eight hours after the spinal puncture, she was covered with petechiae, which were also present on the mucous surfaces and were thickest on the feet and ankles. There was no stiffness of the neck. Treatment was first intravenous, and a blood culture taken prior to this was positive for meningococci. One hour later the child seemed much better, and lumbar puncture was performed. The fluid revealed 2,100 cells; meningococci were absent on smear but were found on culture. Following intensive therapy, she completely recovered.

CASE 18.—D. S., a girl, aged 4 years, had a sibling who died ten months previously of "brain fever," and a twin who had been taken ill two days previously and succumbed to fulminant, undiagnosed infection in thirty-six hours. When the patient was taken ill twelve hours before entry, there were no diagnostic signs. The temperature was high, and the white blood count was 31,000, with 96 per cent polymorphonuclears. A blood culture was taken. The urine was normal. The spinal fluid was clear and contained 4 cells per cubic millimeter. The child was admitted to the hospital twelve hours later. At this time she was desperately ill; there was gray cyanosis. The only new symptom was the presence of a few petechiae—one on the tip of the nose and several on the feet. A diagnosis was made on the basis of the history and the eruption. The child was treated intravenously, and was given parenteral fluids and a transfusion. At no time was her condition other than desperate, and she succumbed eight hours after admission. The spinal fluid taken immediately after death was turbid and contained 8,000 cells, and meningococci were present on culture.

Groups IV and V: Sepsis with Advanced Meningitis and Meningitis with Little or No Sepsis (tables 5 and 6).—The remaining cases are fairly typical of the stage of meningeal localization and need no detailed description. It will suffice to explain notations regarding a few of them:

CASE 23.—J. G., seen in August, 1929, had a severe degree of attendant ethmoiditis, and following virtual recovery from his meningitis died from an infection of the flat bones of the face and staphylococcus septicemia.

CASE 36.—F. L., was in poor physical condition and had congenital heart disease and probably an associated tuberculosis.

CASE 46.—C. B., seen in July, 1929, had both meningococci and influenza bacilli in the spinal fluid.

CASE 56.—V. J., seen in October, 1931, had prolonged meningitis, had also proved coincident tuberculous and meningococcus meningitis.

CASES 52, 55 and 60.—These cases of prolonged meningitis had been diagnosed tuberculous meningitis at an interval previous to entry because of low spinal fluid cell counts. The patients recovered following the establishment of correct diagnosis and adequate treatment.

ABSTRACT OF DISCUSSION

DR. C. A. ALDRICH, Winnetka, Ill.: I want to ask the authors about the high incidence of the rash because in my experience no such high incidence has been seen. I want to ask them about their experience with serum sensitivity, when the serum is given by the intravenous and the intraspinal route. It was interesting that three or four of their patients had meningitis of other types at the time. I suppose they feel that the meningococcus got into the spinal fluid more readily because of the other type of meningitis present. I have not seen this observation made before. When is it best to stop the treatment and when to begin the treatment? I should like to have the authors enlighten me on that subject. I should like to hear about the type of serum which they are using and about the new types being heard of. It is important to recognize that the great contribution of this article lies in its emphasis on the twofold pathogenesis, toxic damage to cells and bacteremia. They believe that it is necessary to understand this in order to treat patients intelligently during the various stages of the disease.

DR. A. B. SCHWARTZ, Milwaukee: This paper emphasizes the great importance of early diagnosis in cerebrospinal meningitis. In no other disease, with the exception probably of diphtheria, is an early diagnosis as important. The authors have called attention to the fact that one is dealing here with a disease that is systemic. Cerebrospinal meningitis in the endemic form is not a disease that one recognizes by the local or meningitic symptoms alone but by being on the alert for those systemic manifestations that call the clinician's attention to something being wrong in the brain or spinal cord. That particular awareness of a certain type of irritability that is present in the child with a cerebrospinal meningitis is the quality I have noticed in the older clinicians—the ability to sit by a bedside and, without getting much history or doing much else, to come to a rapid-fire conclusion that perhaps here is a case of cerebrospinal meningitis. I think it was Gordon in Detroit who practiced the custom of injecting the serum intraspinally first, then waiting a few hours before giving a massive intravenous dose, so as to avoid the possible anaphylactic effect of a primary intravenous dose. I would like to hear the opinion of Drs. Shaw and Thelander on whether this is as important as Dr. Gordon has indicated. There is one other question, which came to mind when I was asked to do a spinal puncture on the child of a dear friend. I have since wondered whether local anesthesia should or should not be used in spinal punctures. I do not believe that it is the custom in most hospitals.

DR. JOSEPHINE B. NEAL, New York: The type of case that Drs. Shaw and Thelander have been encountering in San Francisco is different from the type that I have been encountering in general in New York. I have seen relatively few cases in which the septicemic phase of the disease has been outstanding. Of course, a certain number of those cases are seen, but in a great majority the bacteremic period has been a very short one and has gone on to the development of meningitis within twenty-four to forty-eight hours from the time of the first clinical symptoms. In regard to the question of the value of serum in meningitis, I am firmly convinced that those who doubt its value have been unfortunate in the type of serum they have been using. Unfortunately, there is at present no laboratory test that enables one to tell definitely whether the serum will be of high or of low therapeutic value. I should like to speak briefly of meningitis in children in the first year of life. I have seen 209 children less than 1 year of age. In this group the mortality has been 50 per cent. Of 206 infants in which the sex was stated, 132 were males and 74 females. A high preponderance of males occurred even in the first year of life, in which the difference of exposure would be unimportant. I wish to make a plea for the earlier diagnosis of meningitis in babies. The symptoms of meningitis in babies are different from those in older children and adults. One does not see early the stiffness of the neck, the Kernig sign and the changes in reflexes that are characteristic in older patients. There is usually a rather sudden onset with vomiting, irregular fever, greenish, slimy stools, and a bulging fontanel. Any baby who is sick with any one or two of these symptoms

in which the cause of the illness is not perfectly obvious should be given a lumbar puncture early. When it is carefully done, it is an entirely harmless procedure. I am sure that the high mortality is due to the fact that most of these babies are seen after they have been sick for a week, ten days, two weeks or even longer. Another point in the treatment of these infants is this: If a block occurs and it is necessary to resort to other means of withdrawing the serum than by a lumbar puncture, it is much safer to do a ventricular puncture than a cistern puncture.

DR. GILBERT J. LEVY, Memphis, Tenn.: Drs. Shaw and Thelander have called attention to the effect of the toxins in this particular disease. I too, after an experience with 500 patients over a period of ten years, have come to the conclusion that the toxins play a more or less major part in the etiology of the disease, and therefore I am inclined toward the treatment by means of a true antitoxin. In December, last year, I was asked to use a new antitoxin developed by injecting the toxic filtrate of the meningococcus into the horse. This true antitoxin has been administered intravenously and intraspinally. To date I have treated eleven patients with this new antitoxin and nine have recovered completely. One child came into the hospital moribund and died within a period of six hours. The other case was a chronic basilar type showing a definite hydrocephalus. This child was given the treatment, notwithstanding the critical condition, and four weeks later was discharged from the hospital greatly improved. I feel that a great deal lies in this new treatment, and I hope at a later date to give a further report.

DR. E. B. SHAW, San Francisco: As regards the incidence of rash and the difference between the cases Dr. Thelander and I have seen and those encountered in New York, there is no doubt that we have seen an unusual and atypical group. These resemble more the epidemic cases rather than the endemic cases. It isn't our purpose to characterize these conditions as typical of meningococcic meningitis. They did give us an opportunity to study the early stages of the infection, to see the disseminated effect on the blood stream, and to arrange our cases in such a way as to demonstrate the difference between the intoxication and the local bacterial infection. Serum reactions occurred in both intravenous and intraspinal treatment with practically equal frequency. Following intravenous injections, one encounters specific forms of horse serum reaction. Following intraspinal injections, one encounters a pressure reaction which is just as formidable, though of a different mechanism. The method of giving serum first intraspinally and then intravenously desensitizes the patient. If the sub-arachnoid space is not infected it is a mistake to introduce the serum before such actual infection occurs. This time, intravenous treatment should be employed. The occurrence of other types was an added evidence that this increased the vascular permeability. Not only was the meningococcus enabled to invade the blood stream; other organisms, such as tubercle bacilli, two in the group mentioned and one later, also invaded the cerebrospinal canal. In these cases actual tubercles were present in addition to other definite evidence. It is difficult to decide when to stop the treatment. The decision depends on bacteriologic demonstration of the disappearance of the organisms and the increase in reducing substance in the spinal fluid. Many cases are undoubtedly overtreated. Dr. Neal brought out that there is no test that can be applied to indicate which is the most effective serum for the given case, but the serum that is prepared in close conjunction with clinical observations and in which accurate clinical controls are made is far superior to that subjected only to bacteriologic tests. Early diagnosis is of unquestioned importance, and the recognition of rashes and of the early symptoms is of undoubted importance. The occurrence of infections of the blood stream type and of petechiae as evidence of such infection is not new. It was brought out by Herrick and many others. No other bacterial infection can be cited in which the intensity of infestation approximates the intensity of bacterial infestation in meningococcic infection of the blood stream. One cannot name any other bacterial infection in which the bacteria can be found in direct blood smears with the ease with which one finds it in this disease. Use of the local anesthetic depends entirely

on the conscious state of the child. I concur with the use of cistern puncture instead of ventricular puncture as an alternative method for the spinal route. In cases in which there is pressure above the cistern it may be nearly obliterated, and it is a matter of extreme danger, though of extreme ease, to introduce the needle into the cistern as a method of treatment.

HETEROLOGOUS SCARLET FEVER

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AND

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In 1924 we¹ described the presence of scarlet fever toxin in the blood of certain patients with scarlet fever. This observation was confirmed by Cooke.² The toxin was demonstrated by the intracutaneous injection of patients' serum into a group of human volunteers composed of four persons whose serum failed to blanch the rash in scarlet fever and of four whose serum blanched the rash. Those whose serum failed to blanch the rash served as test subjects and the other four as controls. Subsequently, Dick tests were done on the group of volunteers. The test subjects gave positive reactions to the Dick test, and the controls, negative reactions. The reactions elicited by the serums and the Dick tests were similar. The toxin in the patients' serums was shown to be neutralizable both by natural human antitoxin and by artificially produced horse antitoxin. Heterogeneity among the toxins was not observed, and the therapeutic effects of Dochez's scarlatinal antitoxin were prompt and decisive in arresting the toxic phase of the disease.³

TABLE 1.—Two Scarlet Fever Toxins in Patients' Blood

Test subject...	Positive to Dick Test				Negative to Dick Test			
	F.G.B.	E.E.N.	I.H.	E.M.C.	J.D.T.	J.C.F.	R.A.G.	M.G.
Blanching power.....	—	—	—	—	+	+	+	+
Reactions to patient's serum								
1924.....	+	+	+	+	—	—	—	—
1933.....	—	—	—	—	+	—	—	—

These studies were carried on from 1923 to 1925. From 1926 until recently the scarlet fever in New Haven, has in general, been mild and has not furnished an opportunity for carrying out decisive therapeutic experiments in severe cases. During the past winter (1932-1933), however, we have seen three severe cases, two of them fatal, in which potent scarlatinal antitoxin was ineffectual. Accordingly, we studied the toxin in the blood of two of the patients (B. L. and P. C.) and in the pleural exudate of the third (F. A.). The findings of 1924 and 1933 are summarized in table 1.

The methods were the same as those used in 1924. In fact, one of the test subjects and one of the controls remained from the original group. The results of the Dick test and the blanching power of the serum of these two subjects were found to have remained

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1. Trask, J. D., and Blake, F. G.: Observations on the Presence of a Toxic Substance in the Blood and Urine of Patients with Scarlet Fever, *J. Exper. Med.* 40: 381 (Sept.) 1924.

2. Cooke, J. V.: Scarlet Fever: VII. The Course of the Development of Immunity in Scarlet Fever, *Am. J. Dis. Child.* 35: 983 (June) 1928.

3. Blake, F. G., and Trask, J. D.: The Treatment of Scarlet Fever with Antitoxin, Boston M. & S. J. 193: 659 (Oct. 8) 1925; Further Observations on the Treatment of Scarlet Fever with Scarlatinal Antitoxin, *Tr. A. Am. Physicians* 40: 7, 1925.

unchanged, but, interestingly enough, their response to the patients' serums was reversed, as is shown in table 1. It is probable that a new scarlatinal toxin had been observed.

The new toxin was also found in the pleural exudate, which had been filtered immediately after aspiration to remove the hemolytic streptococci that were present. It contained a large amount of toxin, as 0.1 cc. of a 1:200 dilution gave a strong reaction.

In vitro neutralization of the toxic serums and pleural exudate was then obtained with the serum of the non-

TABLE 2.—Neutralization of Scarlatinal Serums and Pleural Exudate by Human Antitoxin

Mixtures— Equal Volumes		Reactions in Subjects	
Toxic Serum	Normal Serum	Negative to Dick Test J. D. T.	Positive to Dick Test F. G. B.
B.L.	F.G.B.	—	—
B.L.	J.D.T.	+	—
B.L.	Saline	+	—
P.C.	F.G.B.	—	—
P.C.	J.D.T.	+	—
P.C.	Saline	+	—
Pleural Exudate 1:100		A.J.V.	F.G.B.
F.A.	F.G.B.	—	—
F.A.	J.D.T.	+	—
F.A.	Saline	+	—

reactive subject, F. G. B., but not with the serum of the reactive subject, J. D. T., as shown in table 2.

It is obvious that the new toxin is neutralizable and that heterogeneity exists among the natural human antitoxins.

We were anxious to test the neutralization of the new toxin with the therapeutic antitoxin which had been used in treating the patients. However, the supply of patients' serum was exhausted. Fortunately, Dr. Wadsworth has been collecting strains of scarlatinal streptococci from cases resistant to antitoxin therapy and, from his laboratory, Miss Wheeler⁴ has already described heterogeneity among the toxins from cultures of scarlatinal streptococci. For this study, she had

TABLE 3.—Dr. Wadsworth's Neutralization Tests

Toxins		Horse Antitoxins Against Various Strains*			
		Monovalent		Polyvalent N.Y.5 and 334 1:100	
N.Y.5	1:1,000	N	0	0	N
Dick II	1:1,000	N	0	0	N
32369	1:1,000	0	0	N	N
B.L.	1:500	0	0	N	N
F.A.	1:500	P	0	N	N
P.C.	1:500	P	0	P	N

* N indicates neutralization; 0, no neutralization; P, partial neutralization, and X, not determined.

prepared a number of monovalent horse serums against toxins from single strains, as well as various polyvalent antiserums. Accordingly, Dr. Wadsworth undertook to have toxins made from the strains of hemolytic streptococci isolated from the blood and pleural exudate of our patients for comparison with his standard toxins. The results of these tests are shown in table 3.

The tests were made by Miss Coffey. It should be noted that goats were used as test subjects. It should

be stated that the N. Y. 5 antitoxin is the standard New York State antitoxin, and that this was used in the treatment of patients B. L. and P. C. Patient F. A. was treated with Squibb's antitoxin as purchased on the market. It can be seen from table 3 that amounts of N. Y. 5 antitoxin which completely neutralized the N. Y. 5 toxin and the Dick II toxin failed to neutralize the B. L. toxin and caused only partial neutralization of the P. C. and F. A. toxins. On the other hand, antitoxin for strain 32369 completely neutralized the homologous toxin, the B. L. and F. A. toxins, partially neutralized the P. C. toxin and failed to neutralize the N. Y. 5 and Dick II toxins. The Dick II antitoxin neutralized the homologous toxin only, further confirming the difference between the Dick II toxin and the new toxin. The polyvalent antitoxin neutralized both the N. Y. 5 toxin and the new toxin. It was not set up against the Dick II toxin because N. Y. 5 antitoxin, which is effective against the homologous strain, neutralizes the Dick II toxin also. In summary, the data show that the new toxins are, at best, poorly neutralized by potent standard therapeutic scarlatinal antitoxin, but that it is possible to prepare an antitoxin which will neutralize them effectively.

That the filtrate toxins of our strains were neutralizable could also be shown when the tests were done on man, and human serums were used as antitoxins. By this means, too, differences between the toxins and

TABLE 4.—Subjects Separated Into Four Groups by Two Toxins

Toxin.....	Group 1		Group 2		Group 3		Group 4	
	Dick	B.L.	Dick	B.L.	Dick	B.L.	Dick	B.L.
Reaction.....	—	—	—	+	+	—	+	+
Number.....	36		42		33		50	
Percentage.....	21		24		20		35	
Total number.....	170							

the Dick test toxin could be demonstrated. To this end we prepared in our laboratory broth filtrate toxins from strains B. L., F. A. and P. C. and from the Dochez N. Y. 5 strain. In each case a filtrate was prepared from a forty-eight hour growth in beef infusion broth to which 0.2 per cent of human blood had been added. The B. L. filtrate elicited the strongest reactions and was chosen for use. The N. Y. 5 strain was used because it is known to make a strong toxin similar to the Dick test toxin. We then performed intracutaneous tests on 170 subjects. One-tenth cubic centimeter volumes were used with the B. L. toxin in dilutions of 1:200 and 1:1,000, the N. Y. 5 toxin in a dilution of 1:1,000 and Squibb's Dick test toxin as dispensed. The reactions were all of the same general type as those obtained with the Dick test and were read and recorded in the usual manner; that is, after from twenty to twenty-four hours any erythema 1 cm. or more in diameter was counted as a positive reaction. With only four exceptions, all subjects who reacted to the Dick test reacted also to the N. Y. 5 toxin. Twenty subjects reacted slightly to the N. Y. 5 toxin and not at all to the Dick test. However, all of those who reacted strongly to the N. Y. 5 toxin reacted strongly to the Dick test, and vice versa; that is, the N. Y. 5 toxin in the dilution used was somewhat stronger than, but qualitatively closely similar to, the Dick test toxin. On the other hand, quite a different relation existed between the results of the Dick test and the reaction to the new

4. Wheeler, Mary W.: Notes on the Antigenic Activity of Hemolytic Streptococci from Different Types of Infection, *J. Immunol.* 23:311 (Oct.) 1932.

toxin (B.L.). Of the ninety-two subjects who gave positive reactions to the Dick test, fifty-nine reacted and thirty-three failed to react to the 1:200 dilution of the B.L. toxin. Of the seventy-eight subjects who gave negative reactions to the Dick test, thirty-six failed to react and forty-two reacted to the 1:200 dilution of the B.L. toxin. Forty-two subjects reacted to the 1:1,000 dilution of the B.L. toxin. Of these, twenty-seven gave positive and fifteen negative reactions to the Dick test. Thus, the results indicate that the Dick and N. Y. 5 toxins are closely similar, but that the Dick and B. L. toxins are widely dissimilar. With these two widely different toxins the subjects could be divided into four groups according to whether they reacted to neither toxin, to one toxin only or to both toxins. This held

TABLE 5.—Neutralization of N. Y. 5 (Like Dick) and B. L. Toxins by Various Human Serums; Groups 1 to 4 (of Table 4)*

Toxins	1D—L—	2D—L+	3D+L—	4D+L+
N.Y.5.....	N	N	0	0
B.L.....	N	0	N	0

* N indicates neutralization, and 0, no neutralization. D— indicates Dick negative; D+, Dick positive; L—, B. L. negative; L+, B. L. positive.

true in children and in adults, but the groups were too small and heterogeneous to make it worth while to relate the reactions to age or past history of scarlet fever. However, the general nature of the distribution of the reactions is shown clearly in table 4, in which the results with the Dick and B. L. (1:200) toxins are summarized.

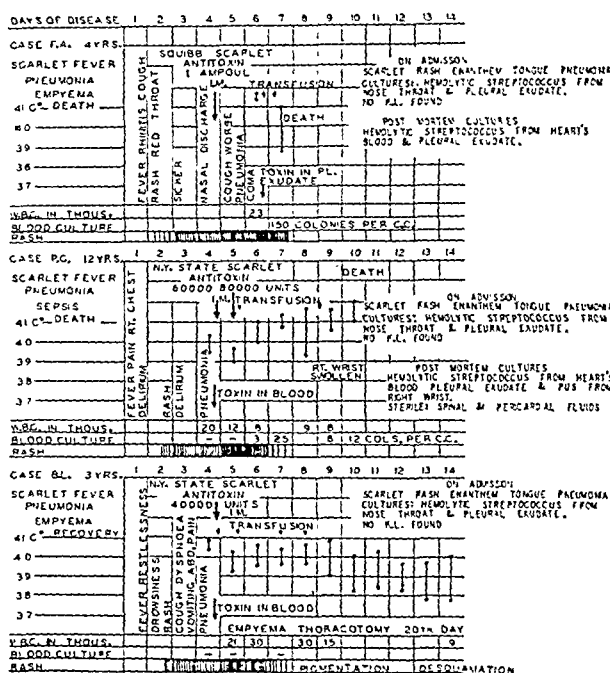
Serum was then collected from two subjects of each group shown in table 4, and also from F. G. B. and J. D. T., who belonged, respectively, to groups 3 and 2. The serums were set up in equal volumes with a 1:500 dilution of the N. Y. 5 toxin and with a 1:100 dilution of the B. L. toxin and incubated for half an hour. A group of twelve subjects reactive to both toxins was given an intracutaneous injection of 0.1 cc. of the

or whether it points to the fact that the B. L. toxin was relatively weaker is impossible to say with the data at hand.

SUMMARY

We have demonstrated, as others⁶ before us have done or suggested, that heterogeneity exists among the toxins derived from scarlatinal streptococci. However, the chief interest of this communication lies in the demonstration and study of a new scarlatinal toxin from the blood and pleural exudate of cases of scarlet fever which failed to give a therapeutic response to potent scarlatinal antitoxin.

We do not wish to imply that this is the usual cause of failure in the antitoxin treatment of the disease, because we have insufficient data on the incidence of this variety of scarlet fever. However, it is significant that Dr. Wadsworth has already prepared a polyvalent antitoxin which does neutralize the new toxin and the standard Dick toxin.



Clinical features in three cases mentioned.

TABLE 6.—Heat Resistance of Three Scarlatinal Toxins*

Toxins	Room	75 C. for 2 Hrs.	100 C. for 2 Hrs.	120 C. for 45 Min.
B.L.....	+	—	—	—
Dochez (N.Y.5).....	++	+	—	—
Dick (Squibb).....	++	+	—	—

* + Indicates a reaction; —, no reaction.

various mixtures and saline toxin controls. Readings were taken the next day. The serum of the subjects in group 1 neutralized both toxins. The serum of the subjects in group 4 neutralized neither toxin. The serum of the subjects in groups 2 and 3 neutralized only the toxin to which they failed to react. The results are shown in table 5.

The heat resistance of the toxic filtrate of the B. L. and N. Y. 5 strains and of the Squibb Dick test toxin was then compared, as shown in table 6.

All three toxins were inactivated by 100 C. for two hours. The commercial Dick test toxin and the N. Y. 5 toxin appeared to be more resistant to 75 C. than the B. L. toxin. Whether this speaks for an actual difference in thermal resistance as described by Hooker,⁵

As regards the clinical features of the disease in our three cases, shown in the accompanying chart, it should be noted that pneumonia developed within the first few days in each case. It is of special interest and, perhaps, not without therapeutic significance, that a large amount of toxin was found in the pleural exudate in one case. We believe this to be the first demonstration of scarlatinal toxin in such material.

CONCLUSIONS

1. Heterogeneity exists among the toxins found in the blood in scarlet fever.
2. Heterogeneity exists among the scarlatinal antitoxins naturally found in man.
3. Polyvalency is desirable in therapeutic scarlatinal antitoxin.

5. Hooker, S. B., and Follensby, Edna M.: Some Properties of Two Active Substances Contained in Certain Scarlatinal Streptococcus Filtrates, *J. Immunol.* 15: 601 (Nov.) 1928.

6. Kirkbride, M. B., and Wheeler, M. W.: Comparison of Reactions in Individuals to Toxins Prepared from Three Strains of Scarlet Fever Streptococci, *Proc. Soc. Exper. Biol. & Med.* 22: 85, 1924. Park, W. H., and Spiegel, R. G.: Complexity of the Scarlet Fever Toxin and Antitoxin, *J. Immunol.* 10: 829 (Sept.) 1925. Wheeler (footnote 4).

ABSTRACT OF DISCUSSION

DR. JEAN V. COOKE, St. Louis: The observations of Drs. Trask and Blake give additional proof of the multiplicity of toxins that may be produced by hemolytic streptococci. In 1925, Park and Spiegel, as a result of their work on the neutralization of scarlet fever antitoxin in children with horse antitoxic serum, concluded that the filtrate from a single strain of scarlatinal streptococci was not a single toxin but a group of toxins. Last year Hooker described a B skin reactive toxin from scarlatinal streptococcus filtrates which was distinguishable from the Dick toxin or A toxin. While many streptococcus filtrates contain both A and B toxins, certain strains produce almost exclusively B, and in others the A toxin predominates. My observations on toxins other than the Dick toxin have been limited to this toxin. In 400 children who were tested with 1, 10 and 25 skin test doses of A and B toxins, some were found very sensitive to both and some gave negative reactions to the largest dose of each toxin. Certain others required more than one skin test dose for a positive reaction. One group of children very sensitive to the A toxin did not react to the B toxin, and their serum neutralized the B toxin but not the Dick toxin. On the other hand, positive B reactors always gave a strong or stronger tests with the A toxin. In children sensitive to both, after subcutaneous injections of hemolytic streptococcus filtrate, skin sensitivity was lost more rapidly to the B toxin than to the Dick toxin. There seems no doubt from the skin reactions that the B toxin of Hooker is distinct from the A toxin, but there is little evidence of its importance in clinical scarlet fever. This new toxin would seem to be much more of a separate entity antigenically than the B toxin, and of more significance in the clinical disease.

DR. JOHN A. TOOMEY, Cleveland: The inference of the authors that heterologous strains of streptococci are etiologic agents is shared by most workers in contagious disease hospitals. In the epidemic of scarlet fever that occurred in Cleveland during and in the year following the introduction of the Dick test, nearly all scarlet fever patients had positive Dick tests at the height of their infection and negative reactions during convalescence. There was a lull in the scarlet fever morbidity followed by a small outbreak a few years later, in which but few of the cases showed a positive Dick test at the height of the rash. There was nothing wrong with the Dick test material, since tests on known positives still reacted in the usual way. A streptococcus was isolated from the throat of one of these patients. It produced a toxin in dextrose broth, not very potent it is true, but capable of causing a positive reaction in many of the cases in that epidemic when tested at the height of the disease. The Dick test, which was done simultaneously with the standard toxin material (Squibb's), was often negative. This is slight evidence, especially since no neutralization tests were done, but it substantiates in a way the contentions of Trask and Blake, Wheeler, Kirkbride, Park and Spiegel. In unreported experiments I have found that many of the strains of streptococci carried by the American Type Culture Collection also produced toxins—some more and some less potent, some like the Dick strain which produces toxin rapidly and some not so rapidly, and only when grown a longer time. My clinical experience with scarlet fever antitoxin has been anything but satisfactory, and my unfavorable experiences may be explained by the fact that I did not use a polyvalent antitoxin. I feel that Trask and Blake are correct in inferring that more than one strain of streptococcus may cause the disease, and I agree also that if any antitoxin will be of value it probably would be a polyvalent one.

Metastasis and Carcinoid Tumors.—A number of metastasizing carcinoids have been reported during recent years. Cooke, summarizing all reported cases occurring in the small intestine, found metastases in 26 per cent. Of his own eleven cases, 27 per cent were malignant. He emphasized the fact that, although benign in appearance, the carcinoids frequently metastasized, similar to carcinomas elsewhere in the gastro-intestinal tract. Marangos believes that in time all carcinoids become malignant, due to invasion of the blood vessels by tumor cells, and that the malignancy of the tumor varies with its size. Gáspár agrees, but believes that the tumors may metastasize through the lymphatic system as well.—Raiford, T. S.: Carcinoid Tumors of the Gastro-Intestinal Tract (So-called Argentaffine Tumors), *Am. J. Cancer* 18:803 (Aug.) 1933.

TUBERCULOSIS STUDIES IN TENNESSEE

TUBERCULOSIS IN THE NEGRO AS RELATED TO CERTAIN CONDITIONS OF ENVIRONMENT

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Since 1928, the Tennessee Department of Public Health has been engaged in studies of tuberculosis within the state. Detailed description of the general plan and objectives of the investigation and results of analysis of a part of the material may be found in other reports.¹

One element of the state-wide study has been the development of intensive local studies in selected areas, carried out by a special study unit. This unit was supported in part during the two-year period July 1929-June 1931 by the Julius Rosenwald Fund and, since July 1931, by the International Health Division of the Rockefeller Foundation.

One of the areas selected for special study was Sullivan County, especially the city of Kingsport, where work was begun in July 1930 and continued through July 1931.

The city of Kingsport, incorporated as a town of about 1,000 people in 1917, had a population in 1920 of 5,692 and in 1930 it had increased to 11,914, of

TABLE 1.—Classification with Respect to Status at the Date of Record

Present Members		
1. Examined in clinic, showing		
(a) Evidence of clinical tuberculosis		
(1) Active	11	
(2) Apparently arrested	13	
(b) No evidence of clinical tuberculosis	24	
	526	
2. Not examined in clinic	6	530
		556
Former Members		
1. Living		
(a) Known to have active tuberculosis	1	
(b) No history of tuberculosis	141	
		142
2. Dead		
(a) From tuberculosis	27	
(b) From other causes	69	
		96
		238
Total		794

whom 596 were Negroes. This rapid growth is due to industrial developments, resulting in a very large influx of factory workers (almost entirely white) drawn into the city from the hills and mountains of adjacent counties in Tennessee and Virginia. A few Negroes are employed in the industries, but principally as outside helpers. The majority are employed as janitors, porters, waiters or in domestic service.

The study in Kingsport included among other activities a detailed investigation of 132 Negro families residing in Kingsport and constituting substantially the entire Negro population of the city. Five hundred and ninety-six Negroes were enumerated in the 1930 census as residing in Kingsport, and of these 556 were included

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.
1. (a) Sibley, E.: Differential Mortality in Tennessee, Nashville, Fisk University Press, 1930, pp. 37-46. (b) Bishop, E. L., and Stewart, H. C.: Tuberculosis, Control in Tennessee, J. A. M. A., 99: 356 (July 30) 1932. (c) Crabtree, J. A., and others: A Community Study of the Prevalence of Tuberculosis in the Negro, *Am. Rev. Tuberc.*, to be published.

in the study, only three families known to reside in the city at the time of investigation having been omitted.

The schedule for each of the 132 households included, (1) a record of general conditions of environment of the household as a unit; (2) an individual record of each person residing in the household at the time

TABLE 2.—*Distribution by Age of Persons in Households Classed According to Types of Cases of Tuberculosis in Them*

Age of Persons	Percentage of Persons in Households with		
	(1) Fatal or Existing Active Case	(2) Apparently Arrested Case (Exclusive of 1)	(3) No Known Case of Tuberculosis
0 to 4.....	11.3	10.8	10.8
5 to 9.....	12.1	12.7	10.6
10 to 19.....	27.4	18.1	23.3
20 to 29.....	14.5	18.0	19.9
30 to 39.....	11.3	22.4	22.6
40 to 49.....	9.6	10.5	7.2
50 and over.....	13.7	7.5	5.6
All ages.....	100.0	100.0	100.0

of the investigation, including data as to occupation, history of past illness, clinical history of present illness, if any, results of tuberculin tests, and a record of studies on physical and roentgenologic examination; (3) for individuals giving a history of disease considered probably tuberculous, a summary, giving the time and manner of onset, hygienic management and other pertinent data, and (4) a record of each person who formerly lived in the household but at the time of investigation was either living elsewhere or dead, stating history as to tuberculosis, including age at onset of disease, if any, whether living or dead, and, if dead, age at and cause of death.

Altogether, the records include 794 persons, as classified in table 1.

A detailed description of the twenty-four cases classed as clinical tuberculosis is given in another report.¹⁰ The basis on which the diagnosis of tuberculosis was made is believed to be conservative, because in each instance the diagnosis was confirmed by two or more clinicians. The original records included nine additional cases classed as suspected tuberculosis, but in table 1 these are included in the group recorded as showing no evidence of clinical tuberculosis.

It will be noted from table 1 that in the total population there are fifty-two cases of tuberculosis, which may be classified as (a) fatal, 27; (b) nonfatal (to date of record) active, 12; (c) nonfatal (to date of record) apparently arrested, 13.

ENVIRONMENT

In the records of each of the 132 families studied, data are practically complete with respect to (1) the age of each person; (2) the general cleanliness, neatness and order of the home; (3) the type and ownership of the residence, including the number of rooms, rental value, source of water supply and method of disposal of excreta; (4) the weekly consumption of milk, and (5) the occupation and income of the wage earners.

For purposes of relating the prevalence of tuberculosis to these several conditions of environment, the 132 households have been classified into three groups; namely, those in which there has occurred (a) a fatal or an existing active case of tuberculosis, 25 cases; (b) an apparently arrested case (exclusive of [a]),

7; (c) no known case of tuberculosis, 100. The frequency with which each group of households is associated with these conditions has been determined.

The age distribution of persons in the households classified is shown in table 2.

While the number of persons in each class of households is small, it may be noted that households with cases of tuberculosis differ from those with no cases in that they contain a slightly higher proportion of persons at ages under 10, considerably higher at ages over 40, and a lower proportion in early and middle adult life. In general, the differences noted are more marked for the households with fatal or active cases.

A tabulation of the several environmental circumstances as related to the three classes of households is shown in table 3.

It is noteworthy that while households that have contained cases of tuberculosis are quite generally and consistently more frequently identified with a low order of social, economic and hygienic conditions than those with no tuberculosis, the differences noted are not large, and indeed are generally negligible except when only households with fatal or active cases are considered. These households are more crowded, families are larger, and the rental value of residences is lower; milk consumption per capita is only one-half that in households with no tuberculosis, notwithstanding a larger proportion of young children in these households than in the latter. The classification of households with regard to general cleanliness and neatness of the home is more or less subjective, but all observations were recorded by the same person and hence the criteria for

TABLE 3.—*Various Conditions of Environment in Households Classed According to Presence of Tuberculosis Therein*

	Households with		
	Fatal or Existing Active Case	Apparently Arrested Case	No Known Case of Tuberculosis
I. Number of families.....	25	7	100
Number of persons.....	126	29	401
Persons per family.....	5.0	4.0	4.0
Persons per room.....	1.4	1.1	1.1
Persons per sleeping room..	2.6	2.0	2.0
II. Percentage of residences:			
(a) Single.....	56	71	63
Apartment.....	44	29	33
(b) Owned free.....	20	29	13
Owned encumbered.....	8	7	9
Rented.....	72	64	78
III. Rental value of residences:			
Number giving information	21	5	95
Monthly rental value per residence.....	\$12.50	\$11.50	\$14.30
IV. Percentage of households:			
general cleanliness, neat-			
ness and order:			
Good.....	20	29	51
Fair.....	20	36	31
Poor.....	60	35	18
V. Consumption of milk:			
Number of households giving information.....	19	6	87
Pints consumed per week per person.....	1.0	1.4	2.0

all the households are reasonably consistent. Evidence of filth and untidiness in the home was three times more frequent in households with fatal or active cases than in those with no tuberculosis.

OCCUPATION

As regards the occupational history, data are not available for the 238 former members of the households (including 1 living and 27 fatal cases of tuberculosis) but for the 556 present members, records include a statement as to whether or not employed,

the type of occupation, both past and present, with dates of changes and, when possible, the resultant weekly income. For the twenty-four cases of tuberculosis, records also include the approximate date of onset of the disease. The type of employment and the prevalence of tuberculosis in each occupational group are shown in table 4. For the twenty-four cases of tuberculosis, the occupations recorded are those in which the patients were engaged at the time of probable onset of the disease; for the remaining 532 persons, the occupations listed are those engaged in at the date of record.

The highest prevalence of disease is in persons classed as day laborers. This group consists largely

TABLE 4.—Prevalence of Tuberculosis Among Persons Grouped According to Type of Occupation

	Number of Persons	Cases of Tuberculosis	
		Number	Cases per 1,000 Persons
Day labor.....	21	5	234
Teaching.....	11	2	181
Housework (own home).....	55	6	109
Domestic service.....	97	5	51
Janitor and porter.....	33	1	30
Miscellaneous (includes 14 occupations).....	36	1	28
None.....	82	0	0
School.....	138	3	22
Preschool.....	83	1	12
Total.....	556	24	43

of persons not regularly employed but shifting from one job to another in the capacity of unskilled manual labor. It is of interest that, of the five persons who developed tuberculosis while engaged in this type of occupation, three have changed to less strenuous types of employment since the onset of the disease. Although the number of persons in each occupational group is too small to furnish statistically stable figures of prevalence, it is worthy of note that two of the eleven teachers in the city schools were found to have tuberculosis, and the prevalence of the disease in the school population was slightly above 2 per cent.

It is of further interest that, of the twenty-four persons classed as having tuberculosis, all except three were engaged at the time of the investigation in some type of employment, and these three were confined to bed on account of the disease.

It would seem that the limited data at hand fail to indicate, for this group of persons, any striking association between occupation and tuberculosis, and the disease apparently has had little tendency to cause cessation of work or change in occupation. The average duration of the most recent occupation of persons with tuberculosis is 4.9 years and of others is 5.2.

However, an association of the disease with a low economic scale would seem to have been indicated, and it is further in evidence as regards the weekly income of wage earners in the various classes of households, shown in table 5.

TUBERCULOSIS AND CHILDBIRTH

A record of the approximate age of onset of each case of tuberculosis and, if fatal, a record of the age at death permit a study of circumstances immediately related to the onset of the disease and to its termination by death. Obviously, such related circumstances are not to be interpreted necessarily as contributing factors to the development of the disease or to its fatal termination. However, data regarding the history of childbirth

as related to the year of onset of tuberculosis or death from the disease seem worthy of mention.

Of the fifty-two cases of tuberculosis, including both fatal and nonfatal cases, thirteen occurred in mothers (persons who have borne one or more children) during the child-bearing period. In order to relate the development of tuberculosis with the occurrence of childbirth, the data have been assembled to show the number of cases developing and deaths occurring during the year immediately following childbirth and, for comparison, the number of cases and deaths during the remainder of the child-bearing period. In the following analysis, the child-bearing period has been assumed to begin with the age of marriage and to extend to the age not exceeding 40 years. The latter limit was imposed in order to insure conservative figures.

In the 132 households, records are available for 75 mothers who have had a total of 1,333 person-years' experience dating from marriage and entrance into a household and extending to an age not exceeding 40 years. This experience may be divided into two classes: (a) person-years immediately following childbirth (= the number of births), 354; (b) person-years not immediately following childbirth, 979, totaling 1,333. Cases and deaths from tuberculosis occurring within each of these periods together with case and death rates per thousand person-years, the latter being equivalent to annual rates per thousand persons, are shown in table 6.

It will be noted that in the seventy-five mothers, considered only during the child-bearing period, cases of tuberculosis have occurred four times and deaths eleven times more frequently during the one-year period immediately following childbirth than during other times.

HISTORY OF OTHER DISEASES

Records are available for 541 persons (living and present in the households at the date of record) as to the past history and date of onset of various diseases, including influenza, pneumonia and pleurisy. Study of the development of tuberculosis in relation to the occurrence of these diseases has been approached in the same way as that in relation to childbirth;

TABLE 5.—Income of Households

Households with	Average Income per Week of Wage Earners
Fatal or existing active case.....	\$10.24
Apparently arrested case.....	16.00
No known case of tuberculosis.....	15.75

namely, by the determination of the number of persons who dated the onset of tuberculosis within the year immediately following one of these diseases, and, for comparison, the number of cases of tuberculosis developing at other times during residence in the present households. One case of tuberculosis which developed prior to the entrance of the patient in the present household has been excluded from the calculations, thus making a total of 540 persons, including 23 cases of tuberculosis.

From the date of entrance into the households up to the date of record, the life experience of these 540 persons totals 5,589 person-years. During this experience, there have occurred 180 cases of influenza, 65 of pneumonia, and 16 of pleurisy. Thus, with respect to each of the three diseases, the 5,589 person-years may be divided into those (a) immediately following

the disease (= number of cases), and (b) the remaining experience. Cases of tuberculosis are then classified as, (a) developing within the year immediately following an attack of one of the diseases mentioned, and (b) developing at other times.

The number of person-years classified as indicated, together with the number of cases of tuberculosis and corresponding case rates per thousand person-years are shown in table 7.

It is of interest that 3 per cent of recorded cases of influenza, 6 per cent of pneumonia and almost 19 per cent of pleurisy were followed within a year by tuberculosis. One fourth of the total cases of tuberculosis

TABLE 6.—Cases, Deaths and Annual Rates from Tuberculosis in Mothers During Years Immediately Following and not Immediately Following Childbirth

Years	Number of Person-Years	Cases of Tuberculosis		Deaths from Tuberculosis	
		Num-ber	Annual Rate per 1,000	Num-ber	Annual Rate per 1,000
Immediately following childbirth.....	354	8	22.6	4	11.3
Not immediately following childbirth.....	979	5	5.1	1	1.02

date the onset of the disease during the year following an attack of influenza, and more than half of the cases are associated with influenza, pneumonia or pleurisy.

MARITAL TUBERCULOSIS

Conjugal tuberculosis is a question about which authorities differ. Different statistics are reported in the literature with entirely conflicting conclusions. The nature of the data at hand has seemed to warrant their inclusion in this report; however, they are considered merely as records of observation, being too limited to allow any serious deductions.

Records as to the presence or absence of tuberculosis in both husband and wife are complete for 128 families. In each of the four remaining families, only one of the consorts was examined, but in all of these the results of the clinic examinations were negative.

In the 128 families, tuberculosis (including both fatal and nonfatal cases) was found to have occurred in thirteen husbands (10.2 per cent) and sixteen wives (12.5 per cent). These families, grouped according to the presence or the absence of tuberculosis in one or both consorts, are shown in the following summary: (1) husband tuberculous, wife nontuberculous, twelve; (2) husband nontuberculous, wife tuberculous, fifteen; (3) both husband and wife tuberculous, one; (4) both husband and wife nontuberculous, 100.

The twenty-nine cases of tuberculosis in consorts occurred in members of twenty-eight different households, there being only one family in which both husband and wife had the disease, a frequency well within the limits of a random distribution. It thus appears that for this small group of families, tuberculosis in one consort has had little, if any, influence on its development in the other.

DEATHS FROM TUBERCULOSIS AND ORPHANAGE

Since the establishment of the 132 households, 27 deaths from tuberculosis have occurred, 10 (slightly more than one third) of which were in parents. The deaths in parents are of interest with respect to resultant orphanage. The relationship between deaths from the disease and orphanage is shown in the following summary: number of parents who died from tuberculosis,

10; number of decedents leaving children under 16 years of age, 8; number of children under 16 years of age, 21; number of orphaned children per hundred deaths, 210. That is, slightly more than 200 children are orphaned per hundred deaths from tuberculosis in parents.

It is of interest that, of the twenty-one children orphaned, twelve have died since the death of the parent. From the date of death of the parent to the date of death of the children, or to the time of investigation, if living, the twenty-one children had a total of 178 person-years of life. Twelve deaths occurring during this period makes a death rate of 67.4 per thousand person-years, which is equivalent to an annual death rate of 67.4 per thousand persons. Of the twelve deaths, five occurred during the first year of life, four between ages 1 and 6 years, and three between ages 10 and 24.

SUMMARY

1. One element of a state-wide study of tuberculosis in Tennessee has been an investigation of 132 Negro families residing in Kingsport in 1930 and constituting substantially the entire Negro population of the city.

2. Of the 556 persons living in the households at the date of record, 550 were brought into the clinic for examination and, of these, 24 were found to have tuberculosis; of the 238 former members of these households, 1 is known to have had active tuberculosis at the date of record and 27 are known to have died from the disease, making for the entire population a total of 52 cases of tuberculosis, including both fatal and non-fatal cases.

3. Households that have contained cases of tuberculosis, and more especially fatal or existing active cases, are more crowded, families are larger and the rental value of residences is lower than those with no tuberculosis; milk consumption per capita is considerably lower and evidence of filth and untidiness in the home is three times more frequent in the former class of households than in the latter.

TABLE 7.—Cases of Tuberculosis Developing in Relation to the Occurrence of Influenza, Pneumonia and Pleurisy

Year	Number of Person-Years	Cases of Tuberculosis	
		Number	Rate per 1,000 Person-Years
Following influenza.....	180	6	33.3
Not following influenza.....	5,409	17	3.1
Following pneumonia.....	65	4	61.5
Not following pneumonia.....	5,524	19	3.4
Following pleurisy.....	16	3	187.1
Not following pleurisy.....	5,573	20	3.6

4. The data with respect to occupation show no unusual prevalence of tuberculosis in any occupational group except that classed as day laborers. In this group the prevalence of disease is 234 per thousand persons. Two of the eleven teachers in the city schools and slightly more than 2 per cent of the school population had tuberculosis. The disease apparently has had little tendency to cause cessation of work or change in occupation.

5. In seventy-five mothers in these households, considered only during the child-bearing period, cases of tuberculosis have occurred four times and death eleven times more frequently during the one-year period immediately following childbirth than during other times.

6. Three per cent of recorded cases of influenza, 6 per cent of pneumonia and 19 per cent of pleurisy

were followed within a year by tuberculosis. One fourth of the total nonfatal cases of tuberculosis date the onset of the disease during the year following an attack of influenza and more than one half of the cases are thus associated with either influenza, pneumonia or pleurisy.

7. For this small group of families it would seem that tuberculosis in one consort has had little, if any, influence on the development of the disease in the other.

8. Slightly more than 200 children were orphaned per hundred deaths from tuberculosis in parents. Since the death of the parent, the twenty-one children orphaned have suffered an annual mortality rate, from all causes, of 67.4 per thousand. Of the twelve deaths that occurred in this group, five occurred during the first year of life.

ABSTRACT OF DISCUSSION

DR. J. A. MYERS, Minneapolis: Instead of accepting the old belief that the Negro and other primitive races have almost no resistance to tuberculosis, Dr. Crabtree has established some definite facts. He has looked to certain environmental conditions to account for at least a part of the high incidence and mortality of tuberculosis among Negroes. In homes in which there have been cases of tuberculosis, he found evidence of filth and untidiness three times more frequently than in homes in which there is no tuberculosis. This is a significant fact, since tuberculosis is a communicable disease. I have made periodic examinations of Negro, Indian and Mexican children and have found that they react to the first infection type of tuberculosis in precisely the same manner as do the white children. Although the occasional one dies in infancy or childhood of miliary tuberculosis or tuberculous meningitis caused by endogenous reinfection, the vast majority have no serious illness from the first infection. They develop inflammatory areas casting homogeneous shadows on the x-ray film, and these areas resolve and later Ghon tubercle formation and calcium deposits in the hilus make their appearance, apparently in the same time and the same manner as they do in white children. I doubt whether the subsequent danger from endogenous reinfection is any greater in them than in the white children. I am also doubtful as to whether they tolerate reinfections from exogenous sources in subsequent years more poorly than white children. If the white children were subjected to as frequent exposures and as large doses of tubercle bacilli as the Negro, the Indian, or the Mexican children are, would not their mortality be just as high? The recent observations of von Kleins have shown that native Africans tolerate well the first infection with tubercle bacilli. The South African Institute for Medical Research examined approximately 100,000 native African boys before entering the gold mines, and about 65 per cent reacted positively to the tuberculin test. They were apparently in good health and therefore must have tolerated the first infection with tubercle bacilli well; that is, they developed the same benign first infection type of tuberculosis as white children do. Such facts are most encouraging and probably will change the fatalistic point of view with regard to tuberculosis among Negroes, Indians and Mexicans into a very optimistic one.

DR. JOHN RITTER, Miami, Fla.: I wish to ask a few questions. No mention was made of the syphilitic syndrome, which I find much more prevalent in the Negro than in white people and which I believe has the effect of increasing tuberculosis. A statement was made in the charts about pleurisy in tuberculosis. All patients with idiopathic pleurisy are tuberculous; one has tuberculosis before one develops pleurisy. The U. S. Census of 1900 states that out of every hundred thousand persons, 180 white persons, 480 Negroes and 508 Indians are tuberculous. The tuberculosis mortality has been lessened in white persons but not in Negroes or Indians. The present mortality in white persons is about 58 per hundred thousand. I believe that the decrease in mortality is due to immunity more than to education. We are immunizing ourselves. I believe that in another hundred years the white race will be completely immunized against tuberculosis. The Negro race and the Indian have not been in contact with tuberculosis as long as the white

race. I will give some analogies. In the South I see quite a few cases of leprosy. It was rampant in Europe from the sixth to the sixteenth century. In the sixteenth century it disappeared abruptly and the white people of today have an immunity against this disease. The Caucasian is not subject to leprosy as the Negro and other races are. I believe that we are developing an immunity against tuberculosis.

DR. O. O. MILLER, Louisville, Ky.: The conclusion is inescapable that environmental factors constitute the principal cause in the evolution of phthisis in the Negro. The question arises as to whether there is a greater morbidity among the Negro than among the white population. It is known definitely that the Negro has from two and one-half to three times the mortality rate of white people. Some five years ago I had an opportunity to roentgenograph all the teachers in the public schools of Louisville; 1.4 per cent showed tuberculosis but there was no greater incidence among the Negro teachers than among the white. In an examination of children in the Louisville schools, using two tuberculin Mantoux tests, 0.1 and 1 mg., I found that 20 per cent gave a positive reaction. I obtained 30 per cent of reactions among the white high school boys and girls, while in the Negro high schools the incidence of positive reactions amounted to 60 per cent. There is no question as to the Negro's ability to tolerate a moderate tuberculous infection reasonably well, but, unfortunately, because of environmental factors, he succumbs to massive infection. It is generally conceded that there is a difference in the pulmonary changes in the Negro. In analyzing statistics with regard to the early symptoms, one finds the catarrhal onset predominating, with cough, expectoration, weakness and dyspnea, the pleuritic onset next and then the hemorrhagic, but rarely does one see the insidious type of onset in the Negro. Negroes show little tendency to the development of fibrosis. I think they handle the first infection well, but the reinfections bring about a recrudescence of the disease. The relation of syphilis to tuberculosis is a very interesting topic. All of the patients at Waverly Hills Sanatorium are subjected to the Kahn test, and 49 per cent of the Negro women and 50 per cent of the men give a positive reaction whereas the white give 8.5 per cent of positive reactions. This is probably a factor in the evolution of phthisis in the Negro. The high mortality rate is due to late diagnosis. Fifty-seven per cent of Negroes coming to the clinic with tuberculosis already have a far advanced stage of the disease. The question comes up as to control. What is going to be done to reduce the mortality and morbidity rate? Certainly better housing conditions are indicated. The Negro is pushed out into the alley into a bad environment and into congested districts. Amelioration of these conditions will bring fewer opportunities for reinfection and a corresponding reduction in the mortality rate.

DR. JAMES A. CRABTREE, Nashville, Tenn.: I might have mentioned that this group of Negro families in Kingsport is living under conditions considerably better than that of the average Negro in the South. Their nutrition is in general better; their housing conditions are considerably better. The type of work they do is light, commonly that of domestic servants in the homes of the better-to-do white people. I have been rather surprised at the high prevalence among this group of Negroes of lesions detected on roentgen examination, which I interpreted as calcium deposits. I was likewise surprised at the extent of fibrosis in the lungs of those persons whom I regarded as having tuberculosis. With respect to the point concerning the onset of pleurisy, I wish to state that these data were based on the the history given by the patient, which means, of course, that he gave the time of onset when his disease became apparent to him. As to the point concerning the decline in mortality in the Negro, the following can be stated: While in Tennessee the Negro mortality from tuberculosis is approximately two and one-half times the white mortality, the decline in mortality in the Negro of Tennessee during the last twenty years has been at essentially the same rate as that in the white person. Because of the completeness of the records, I have been enabled to obtain for this group of Negroes reasonably accurate annual rates of morbidity from tuberculosis for the period dating from the establishment of these households and extending to the date of record or to the date of probable onset of the cases of tuberculosis. These

rates were derived by determining the total number of persons' experience, at various ages in these households, and setting up against this experience the number of cases of tuberculosis which have occurred. For this group of families, considered during the entire household experience, the tuberculosis morbidity rate has been approximately 6 per thousand annually. In 1930, the prevalence of tuberculosis in the population studied was approximately 6 per cent.

PHENOLPHTHALEIN INTOXICATION

BEN A. NEWMAN, M.D.

DETROIT

Phenolphthalein has been generally looked on as a harmless drug, and because of the ease of administration it has gained very wide usage. In 1918, Abramowitz¹ and Fox² pointed out that in susceptible persons the ingestion of phenolphthalein causes a peculiar eruption of the skin. Since then, numerous reports have appeared in the literature of atypical as well as typical eruptions, and in a few instances visceral disturbances have been reported. At present the dermatosis is familiar, nineteen patients with phenolphthalein eruptions having been observed in our own clinic during the past year. The characteristic eruption is easy for the dermatologist to recognize immediately on inspection. As far as is known, only three other substances, antipyrine, arsphenamine (nearsphenamine) or amidopyrine, are capable of provoking identical eruptions.

The eruption may be spread over the entire body or may be confined to favorite sites, as the forearms, neck or thighs. The typical eruption consists of somewhat grouped, irregular, polychromatic, macular plaques, varying in size from that of a pinhead to that of a palm, and varying in color from pink to blue-red, violaceous or deep purple. The center of the lesion is usually darker or deeper in color, fading toward the periphery to a pink or bright red areola. A very fine, slight scaling may accompany the evolving lesions, and vesiculation, erosion and superficial ulcerations may occur, especially on the mucous membranes of the mouth and genitals. The appearance of the eruption usually takes place several hours after the drug has been ingested and is accompanied by intense itching and burning. After the subsidence of the active lesions, the inflammatory eruption becomes changed to a brownish or blue-black pigmented spot, lasting for several weeks or months. Relapses occur following renewed ingestion of the drug, most frequently appearing and reappearing at the original sites of the primary eruption, but the plaques may also enlarge peripherally, becoming confluent, or new macules may develop near the margins of these or on hitherto unaffected skin. Mild constitutional symptoms, as headache, malaise, and slight elevation of temperature, may accompany the eruption.

In reviewing the literature, I have been able to collect seventeen types of atypical phenolphthalein eruptions and three types of visceral involvement. To these I wish to add one of each type that I have recently observed and again call the attention of the medical profession to the fact that phenolphthalein is not innocuous.

ATYPICAL CUTANEOUS MANIFESTATIONS

1. Deeply gray pigmented macules.
2. Centrally depressed lesions.
3. Deeply infiltrated lesions.
4. Urticarial transition forms.
5. Urticaria.
6. Edema of eyelids.
7. Conjunctival ecchymosis.
8. Stomatitis.
9. Cancer-like plaques of tongue.
10. Ulcers of tongue.
11. Pernio-like lesions.
12. Vesicular eruptions.
13. Recurrent nasal herpes.
14. Bullous lesions.
15. Pemphigus-like eruptions.
16. Diffuse scaling erythroderma.
17. Paronychia and dystrophy of the nails.
18. Herpes iris type of erythema multiforme.

MANIFESTATIONS OTHER THAN CUTANEOUS

1. Lipoid nephrosis.
2. Toxic nephritis with persistent hematuria.
3. Visceral hemorrhages.
4. Ulcerative colitis.

The deeply gray pigmented macules, the centrally depressed lesions and the deeply infiltrated lesions are not uncommon variations of the typical phenolphthalein eruption and are recognized as such. Shaffer³ described a patient with urticarial transition forms, and Corson and Sidlick⁴ reported a case of urticaria from habitual use of phenolphthalein. I have been told by Dr. Schlivek⁵ that he has seen a number of patients in his ophthalmologic practice with edema of the eyelids caused by the use of laxatives containing phenolphthalein. In 1919, Silberstein⁶ took a single dose of a phenolphthalein purgative, and plaques suggesting cancer appeared on his tongue. A year later another dose caused a painful stomatitis and herpes on the genitals. About the same period a woman consulted him for lassitude, anorexia and conjunctival ecchymosis, the result of taking seven tablets of a phenolphthalein preparation in three days. These experiences at that time prompted him to write: "Phenolphthalein is not an indifferent drug, hence, before this substance is used under one of its hundred decorative titles, the patient must be warned of its possible serious effects."

Rosenbloom⁷ reported a case of recurrent nasal herpes following the ingestion of one-half grain (0.03 Gm.) of phenolphthalein in the form of Alophen Pills. Vesicles, bullae and ulcerations of the mouth and tongue have been described for many years and occur so commonly that now phenolphthalein eruption is considered in differential diagnosis when such mouth lesions of obscure origin are present. The bullous lesions appear chiefly on the lips, genitals and mucous membranes of the mouth. Bullae appearing on the typical dusky red or purple eruption, as shown in figure 2, are frequently seen. It has been generally believed that, with the involution of the bullae, pigmented spots are always found. This is not necessarily true, as will be seen in the case to be reported. Pemphigus and pernio-like lesions have been described by

From the Department of Dermatology and Syphilology, University and Bellevue Hospital Medical College, Service of Dr. Howard Fox.

1. Abramowitz, J. M.: Erythema Multiforme Associated with Cutaneous Lesions. *Clinical and Pathological Report of Five Cases*. *J. Cutan. Dis.* 36: 11 (Jan.) 1918.

2. Fox, Howard: J. Cutan. Dis. 36: 253 (April) 1918 (also cited by Abramowitz¹).

3. Shaffer, L. W.: Phenolphthalein Eruption. *Arch. Dermat. & Syph.* 18: 970 (Dec.) 1928.

4. Corson, E. F., and Sidlick, D. M.: Urticaria from Habitual Use of Phenolphthalein. *J. A. M. A.* 78: 882 (March 25) 1922.

5. Schlivek, Kautman: Personal communication to the author.

6. Silberstein, L.: Der Phenolphthalein-Unfug. *Therap. Monatsh.* 34: 306 (June 1) 1920.

7. Rosenbloom, Jacob: Report of Case of Nasal Herpes Due to Ingestion of Phenolphthalein. *J. A. M. A.* 78: 967 (April 1) 1922.

Scheer⁸ and by Cole and Driver.⁸ Campbell,⁹ and Wise and Sulzberger¹⁰ have reported cases with "subungual, bluish-purplish, sharply demarcated changes of color affecting the proximal portion of the nail-bed of the fingers which at first glance looked like bruised or hemorrhagic areas, but on closer inspection they resembled what phenolphthalein areas may be supposed to look like when viewed through the nail plate." Another case observed by the latter showed nails like that of a chronic paronychia but with the peculiar blue-red color and the nails deformed with transverse heaped up ridges. Bernstein¹¹ described a case in which, after the use of phenolphthalein, a diffuse scaling erythroderma developed with pinhead papules and vesicles, like an allergic dermatitis. Patch tests with phenolphthalein gave positive reactions, and intracutaneous injections



Fig. 1.—Typical phenolphthalein eruption, appearing as dusky, blue-red macular plaques. (Collection of Dr. Howard Fox.)

produced a recurrence of the lesions. Passive transfers were negative. This is the only case I have been able to find that exhibited a true cutaneous sensitivity to phenolphthalein such as could be demonstrated by positive skin tests. The few cases in which I had the opportunity of doing patch tests gave no reactions.

Talley and Glenn¹² reported a case in which a girl had an incipient lipid nephrosis caused by phenolphthalein. The girl had been in the habit of taking enormous doses of this drug. Rosenstein¹³ reported an instance of acute hemorrhagic nephritis from the use of phenolphthalein. A woman had been using for several weeks an antifat preparation, which was found

to contain phenolphthalein. She lost weight, developed a persistent diarrhea and was discovered to have a severe hemorrhagic nephritis. Martinson¹⁴ reported the case of a child, aged 6 years, who, after taking six "Boals Rolls," developed severe catharsis, headache, and vomiting the same evening, followed by hematuria with a toxic nephritis, with 2 ounces of blood daily for several weeks. Cleaves'¹⁵ patient, a healthy 10 year old boy, ate the contents of a box of "Exlax" tablets. The child's temperature rose to 106 F., an eruption of huge wheals arose on the abdomen, and on the fourth day multiple petechiae appeared on the body with subcutaneous hemorrhages of the feet. Hemiplegia followed; the child became delirious and, nine days after taking the tablets, died. Autopsy revealed hemorrhages of various size throughout the length of the intestine, minute hemorrhages of the kidneys, liver, heart and brain, and marked congestion of the meninges. The picture was one of generalized destruction of the vascular endothelium.

REPORT OF CASES

CASE 1.—M. B., a girl, aged 8 years, seen, Oct. 14, 1932, complained of a rash of three days' duration. The lesions were on the face, neck and backs of the hands and forearms, and the anterior surfaces of the lower extremities just above and below the knees. They were typical erythema exudativum multiforme with many herpes iris lesions. The child was treated with calcium, saline catharsis and a bland lotion. The eruption disappeared in ten days. One week later it reappeared at the same sites. At this time the mother stated that she had been giving the child a weekly dose of one teaspoonful of "Agarol" for eight months, and that the day before the first eruption appeared she was given two tablespoonfuls of "Agarol" by her father, who was not acquainted with the usual dosage. The child was again given a dose of one tablespoonful of "Agarol" the day before the recurrence. "Agarol" contains about 1 grain (0.06 Gm.) of phenolphthalein to the tablespoon. With the disappearance of the eruption, I gave the child various doses of phenolphthalein and was able to reproduce the eruption on three different occasions when one-half grain (0.03 Gm.) or more was given. Less than one-half grain did not induce this eruption.

CASE 2.—History.—T. M., a girl, aged 3 years, had been given an "Exlax" tablet on the evening of Sept. 24, 1932, the mother having been in the habit of giving a tablet to each of her three children every Saturday night. Later in the evening the child reached for the box and had eaten five additional tablets before the mother discovered it. During the night the child developed severe diarrhea—continuous watery stools—and cramps. This continued during the next day, and in the afternoon it was accompanied by vomiting, first of food and then of bile-stained fluid. The same day the mother noticed a red blotch respectively on the cheek and on the chest of the child which twelve hours later were covered by large blisters. A physician who was called prescribed some bismuth subnitrate and camphorated tincture of opium. The bullae increased in number; the continuous diarrhea persisted for the next four days and the child was becoming dehydrated and moribund when it was brought into the hospital.

The child had never been ill except for an attack of measles two years before. It had been receiving one "Exlax" tablet each week for a year and had never exhibited any untoward symptoms.

Physical Examination.—When examined by Dr. Meister and myself, September 29, five days after she had taken the "Exlax," the child was acutely ill, markedly dehydrated, with rapid respiration, rapid thready pulse, and an acetone odor on its breath. The lesions were distributed around the mouth and over the chest, thighs and legs. The lesion on the face extended from the malar eminence of the left cheek to the upper lip, involving

8. Scheer, Cole and Driver quoted by Bernstein.¹¹

9. Campbell, G. G.: Unusual Pigmentation of the Nails from Phenolphthalein, Brit. J. Dermat. 43: 186 (April) 1931.

10. Wise, Fred, and Sulzberger, M. B.: Drug Eruption: I. Fixed Phenolphthalein Eruptions, Arch. Dermat. & Syph. 27: 549 (April) 1933.

11. Bernstein, F.: Ueberempfindlichkeit gegen Phenolphthalein, Dermat. Ztschr. 62: 368 (Dec.) 1931.

12. Talley, J. E., and Glenn, H. R.: Incipient Lipoid Nephrosis and Phenolphthalein Poisoning, M. Clin. North America 13: 825 (Jan.) 1930.

13. Rosenstein, P.: Der Unfug mit Phenolphthalein. Münch. med. Wchnschr. 67: 263 (Feb. 27) 1920; abstr. J. A. M. A. 75: 1168 (Oct. 28) 1920.

14. Martinson, Herman: Toxic Nephritis, Arch. Pediat. 41: 578 (Aug.) 1924.

15. Cleaves, Montague: Poisoning by "Exlax" Tablets, J. A. M. A. 99: 654 (Aug. 20) 1932.

the vermilion border and the mucous membrane. It was roughly oval, about the size of a silver dollar (38 mm.) and slightly elevated. The surface was covered with the dried epidermis of a preexisting bulla. The color was reddish violet with the margin a deep pink, somewhat thickened and sharply outlined. There were two irregular palm-sized patches on the upper left side of the chest, extending over and involving the anterior axillary fold. They were exactly like the lesion on the face. On the anterior surface of the thighs and legs were seven variously shaped, violaceous macules, from the size of a pea to that of a quarter, sharply outlined, slightly infiltrated, and without scaling. Three of these lesions had central vesicles no larger than a millet seed. No other abnormalities were found on physical examination.

The blood count, September 29, was: red blood cells, 4,400,000; white blood cells, 12,600; polymorphonuclears, 58 per cent; lymphocytes, 42 per cent; hemoglobin, 60 per cent. The urine was normal, and phenolphthalein could not be demonstrated by the addition of sodium hydroxide. The stools were streaked with fresh blood.

Course of the Disease.—The prognosis was considered poor. The child was given continuous intravenous infusions of saline and dextrose solutions, but she did not seem to improve during the next week. She was then given blood transfusions of 200 cc., October 6 and 8, and she immediately showed considerable improvement. The temperature ranged from 101 to 103 F. until October 6, when it gradually declined to normal. By that time the evacuations had decreased to about fifteen a day and retention enemas of tincture of *Krameria* in starch paste were given. October 10, she began taking fluids by mouth, and eight days later the movements were only six a day with no fresh blood. Guaiac tests were positive for occult blood until the patient left the hospital. She was discharged, October 22, twenty-four days after the onset of her illness. The lesions on her skin gradually faded until only a faint erythema remained at the original sites of the eruption, with no trace of the pigmentation usually seen after these bullous eruptions. Shortly after returning home the child recovered completely.

Since I was unable to demonstrate any phenolphthalein in the urine or stool of the patient five days after she had taken the drug, it is impossible for me to believe that her diarrhea was due to the persistent action of the drug. I am forced to look on the intestinal lesion as a similar process to that occurring on the skin and mucous membranes, and it is not unreasonable to assume the formation of a bullous eruption in the mucous membrane of the large intestine with a subsequent nonspecific ulcerative colitis.

PHARMACOLOGY AND TOXICOLOGY

The literature contains only meager accounts of the toxicity or even the physiologic effect of phenolphthalein. It is a crystallized coal tar derivative related to the anthraquinones and belongs to the class of dyes which include eosin, fluorescein and fuchsin. It is commonly used as an indicator and is also used as a laxative in doses of from 1 to 7 grains (0.06 to 0.45

Gm.). Its formula is $C_6H_4 \left\langle \begin{smallmatrix} (CH_2OH)_2 \\ CO \end{smallmatrix} \right\rangle_0$. Bastedo¹⁶ states

that phenol is not liberated from phenolphthalein after administration, and that its laxative action is mild, is nongripping, and depends on stimulation of peristalsis mostly in the small intestine, and to some extent on the prevention of absorption from the large bowel. Cushney¹⁷ states that some of the phenolphthalein is reabsorbed into the blood from the large intestine by way of the bile, so that it acts for several days as a

mild laxative, gradually being eliminated in the stools and to a less extent in the urine. Wood¹⁸ has shown in experiments on dogs that doses which in human beings would be equivalent to from 60 to 100 grains (4 to 6.5 Gm.) are quite harmless. Abel and Rowntree¹⁹ gave animals enormous doses intravenously without harmful effects. Hydrick²⁰ reported albuminuria following the ingestion of from 1 to 2 grains (0.6 to 1.2 Gm.) in twenty consecutive tests, but Bastedo has not found a single instance of albuminuria following phenolphthalein in the course of frequent urine examinations during an extensive clinical use of the drug.

Considerable discussion has arisen as to how the pathologic process is produced. It has been generally believed that it is most likely a split product of phenolphthalein in the body, or due to impurities in the drug. There are two types of phenolphthalein: the yellow, or so-called impure form containing large amounts of resinous by-products with which it has been alleged that toxic effects most frequently occur, and the white, a relatively pure form. Novy²¹ has disproved both of these theories by obtaining a recurrence with the administration of either the yellow, or impure, form or a

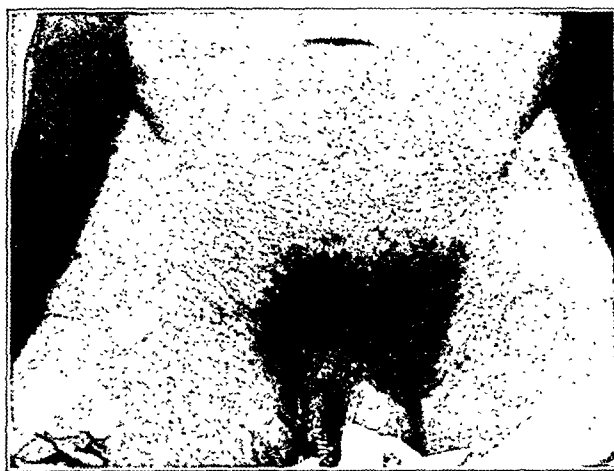


Fig. 2.—Bullous lesions over body, with vesiculation and erosion on penis, following ingestion of 1 grain (0.06 Gm.) of phenolphthalein. (Collection of Dr. Howard Fox.)

chemically pure phenolphthalein. The administration of five of the split products produced no eruption and so he concluded that the eruption was due to a reaction in the individual to the fixed molecule and not to any of its split products.

PATHOLOGY AND PATHOGENESIS

In the present state of knowledge, the lesions of this eruption appear to be histologically indistinguishable from those of erythema multiforme. The clinical manifestations, both typical and atypical, including the non-cutaneous morbidities associated with phenolphthalein intoxication, may all readily be ascribed to a primary vascular insult. In considering the pathogenesis of fixed eruptions, in which group phenolphthalein intoxication belongs, reasoning must conform with the concepts associated by definition, with the term "fixed eruption." The tendency to recur or persist at a site previously that of an initial lesion, together with its

18. Wood, H. C., Jr.: *Rep. Philadelphia Hosp.* 7: 183, 1909.

19. Abel and Rowntree: *Action on Some Phthaleins and their Derivatives*, *J. Pharmacol. & Exper. Therap.* 1: 262, 1909-1910.

20. Hydrick, J. L.: *Albuminuria Following the Ingestion of Phenolphthalein*, *Proc. Am. Soc. Biol. Chem.*, 1914, p. 36.

21. Novy, F. G.: *Phenolphthalein Eruption: Experimental Data on Its Causation*, *Arch. Dermat. & Syph.* 26: 125 (July) 1932.

exudative character, favors the belief that a capillary toxicosis is the key to the pathogenesis.

COMMENT

Phenolphthalein is contained in more than 125 proprietary preparations, put up in the form of laxative drugs, chewing gums, confections, fruits and biscuits. It is also used for pink icing on cakes, for coloring of candies, and in pink mouth washes and dentifrices. There exists, therefore, a multitude of possibilities for the ingestion of the drug. Hence, when exudative lesions of obscure origin are present, phenolphthalein as an etiologic agent should be considered in differential diagnosis.

EFFECT OF TONSILLECTOMY ON THE
DEVELOPMENT OF IMMUNITY
TO SCARLET FEVER

AS SHOWN BY THE DICK TEST

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In 1927, Collins and Sydenstricker¹ made a statistical study of the frequency of scarlet fever in tonsillectomized and nontonsillectomized children. They came to the conclusion that tonsillectomy and the incidence of scarlet fever are not correlated with each other. Hofmann,² in 1931, corroborated Collins and Sydenstricker's statements and added that even in the course and complications of scarlet fever no difference is noted between the cases occurring in children with their tonsils removed and in those still having tonsils. However, Berberich and Jordanoff³ published several articles on the beneficial effect of tonsillectomy in the prevention of scarlet fever. We thought that another way of analyzing the effect of tonsillectomy on the development

TABLE 1.—Frequency of Positive Dick Tests at Different Ages

	Zingher's Standard Figures ⁴			Controls Who Never Had Scarlet Fever			Patients Selected for Tonsillectomy Who Never Had Scarlet Fever		
	Dick Tests			Dick Tests			Dick Tests		
	—	+	%+	—	+	%+	—	+	%+
Total.....	1,681	1,297	43	356	227	38	179	178	49
0-1 yr.....	34	47	58	84	23	21	1	0	..
1-2 yrs.....	66	167	71	48	42	46	3	4	57
2-3 yrs.....	73	131	64	34	30	46	8	25	74
3-4 yrs.....	95	146	60	29	28	49	31	42	57
4-5 yrs.....	126	128	48	26	30	53	27	41	60
5-10 yrs.....	1,277	678	34	135	74	35	109	68	37

of immunity to scarlet fever could be carried out by determining whether the children who react positively to the Dick test before the removal of their tonsils and adenoids become immune, as shown by a change in their reaction to the Dick test, when tested six months later.

We undertook this study about a year and a half ago in the pediatric service of the Fifth Avenue Hos-

pital. During this period, 492 patients were admitted for tonsillectomy and 675 children for other causes. All of these patients received an initial Dick test. Control tests with heated toxin were not made, as it was thought to be unnecessary. The tests were made and interpreted mostly by experienced physicians or by Miss Alper, who has had a great amount of experience in the Health Department. We read the tests twenty-four hours after they were done.

Table 1 shows the frequency of positive Dick tests according to different ages. We compared the children selected for tonsillectomy with those whom we used as controls. The two groups run fairly parallel with each other, the controls showing a percentage of 11 less of positive Dick tests. If we compare our figures with the standard figures of Zingher⁴ for the similar ages, his percentages for the frequency of positive Dick reactions are fairly similar to ours, occupying a middle place between our controls and our cases selected for tonsillectomy.

We excluded from table 1 forty-eight children who had a history of scarlet fever. Twenty per cent of these patients still gave a positive Dick reaction. In a group of 80 patients recovering from scarlet fever, Zingher also found in 20 per cent a positive Dick reaction when tested six days or longer after the onset of the disease.

TABLE 2.—Change from a Positive to a Negative Dick Test in Tonsillectomized and Nontonsillectomized Children Retested After Six Months

Type of Case All Dick Positive at Beginning of Observation	At End of Six Months			
	Total	Positive Dick	Negative Dick	
			Number	Per Cent
Controls: Children retaining tonsils..	31	28	3	9
Tonsillectomized children	34	29	5	15

In our series the change to a negative reaction occurred in 9 per cent of those not operated on and in 15 per cent among the newly tonsillectomized patients. This difference is hardly sufficient to prove that it was due to tonsillectomy.

CONCLUSIONS

From this limited number of cases, it might be said that tonsillectomy has certainly no marked effect on the susceptibility to scarlet fever within six months after it is done, as demonstrated by the changing of a positive Dick test into a negative one.

1148 Park Avenue.

4. Zingher, Abraham: (a) Internat. Clin. 3:216 (Sept.) 1924; (b) The Dick Test in Normal Persons and in Acute and Convalescent Cases of Scarlet Fever, J. A. M. A. 83:432 (Aug. 9) 1924.

The Rheumatic Lung.—It is generally agreed that pleurisy is, next to carditis, the most common complication of rheumatic fever. Our conception of rheumatic pleurisy is that of a specific inflammatory lesion, similar to that of a rheumatic pericarditis or arthritis. Although this view has long been accepted, no definite description or characteristic pathological picture appeared in the earlier writings. . . . It was not until 1928 that Paul first described the specific nature of the pleurisy. On close inspection there is a thin film of fibrin on the surface of the pleura in the earliest stage, which may be replaced later by a thick fibrinous exudate on both parietal and visceral pleurae. Subsequently organization of the fibrinous adhesions occurs. Paul never found, however, thickened hyalinized pleura seen so frequently in the late stages of tuberculosis.—Howard, C. P.: The Rheumatic Lung, Ann. Int. Med. 7:165 (Aug.) 1933.

From the Pediatric Service of Fifth Avenue Hospital.
We are indebted for their help to David Hauptman, M.D., Oscar Rimson, M.D., David Nemhauser, M.D., Leah Alper, health department technician and Miss G. Matthews, nurse in charge of the Pediatric Service of the Fifth Avenue Hospital.
1. Collins, S. D., and Sydenstricker, Edgar: Pub. Health Bull. 175, 1927.
2. Hofmann Lotar: Monatschr. f. Ohrenh. 65:144 (Feb.) 1931.
3. Berberich, J., and Jordanoff, K.: Deutsche med. Wchnschr. 54:2051 (Dec. 7) 1928; Ztschr. f. Laryng., Rhin. 17:352 (Jan.) 1929.

ACUTE TRANSITORY CEREBRAL MANIFESTATIONS IN INFANTS AND IN CHILDREN

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Among the many problems confronting the physician are those of the differential diagnosis and treatment of acute transitory cerebral manifestations in infants and in children.

The cases usually occur during the autumn and winter, and often at night. They rank next to croup in the frequency with which they disturb the sleep of the practicing physician and of the hospital intern. The patient, an infant or an older child, becomes ill suddenly, with fever, apathy or convulsions. On examination the child is drowsy or comatose, his neck is usually rigid, and the Brudzinski and Kernig signs are positive. There may even be a facial paralysis, hemiplegia or diplegia. The chest may have an occasional rôle; the throat may be red, and the ear drums congested. The physical examination may, however, give negative results except for the cerebral manifestations.

It is true that the diagnosis often establishes itself within a day or two, when the cerebral symptoms disappear, and either otitis media or pneumonia appears, or the patient recovers entirely. The difficulty, however, is the immediate diagnosis and treatment. The most important question, naturally, is the ruling out of meningococcus meningitis, in which case serum should be given early.

The terms meningism and serous meningitis, the former described by Dupré¹ and the latter by Quincke,² are used extensively in the literature to signify rigidity of the neck and positive Kernig and Brudzinski signs which accompany pneumonia or otitis media, and which subside in a short while. On the other hand, when coma or drowsiness is present, the condition is usually designated as encephalitis, toxic encephalitis or encephalopathy. When convulsions are present, the condition is often diagnosed as tetany or epilepsy. However, there frequently occurs a combination of signs of meningeal irritation, convulsions and drowsiness, with no one symptom predominating, a condition which defies classification.

Perhaps the most baffling transitory neurologic manifestation in children is paralysis. A child will enter the hospital with ptosis, asymmetry of the face, or frank hemiplegia, whereupon a diagnosis of encephalitis or of intracerebral hemorrhage will be promptly made. One or two days later the paralysis disappears either without a trace, or leaving pneumonia in its wake.

The question is: What is the nature of these manifestations? Can they be classified into anatomic, or even into clinical, groups and how are they to be dealt with?

After studying these cases, I have come to the conclusion that it is hardly possible to differentiate the acute neurologic manifestations anatomically; furthermore, that it is even impossible to separate them into definite clinical entities, but that they represent rather

a symptom complex, which I should like to group under the term "acute transitory cerebral manifestations."

I studied eighty children with acute cerebral manifestations admitted to the Children's Hospital of the Cook County Hospital and to the Sarah Morris Hospital for Children of the Michael Reese Hospital. Fifty of the cases proved transitory. Four of the patients were between the ages of 6 and 12 months, nine between 1 and 2 years, seven between 2 and 5 years, fifteen between 5 and 10 years and fifteen between 10 and 13 years.

The distribution of cases according to sex was striking. Of the fifty cases of cerebral manifestations, forty-one, or 82 per cent, occurred in boys, and only nine, or 18 per cent, occurred in girls. Only further study can determine whether this was merely a coincidence or whether it is significant.

The following points were studied: type of cerebral manifestation, duration of symptoms, association with acute infectious diseases, blood and cerebrospinal fluid and the effect of spinal puncture.

TYPE OF CEREBRAL MANIFESTATION

In the order of their frequency, the symptoms were as follows: Brudzinski, Babinski and Kernig signs, rigidity of the neck, drowsiness, convulsions, hemi-

TABLE 1.—Type of Acute Transitory Cerebral Manifestations in Fifty Patients

Brudzinski.....	32
Drowsiness.....	20
Convulsions.....	10
Hemiplegia.....	4
Coma.....	2
Ptosis.....	1
Facial palsy.....	1

plegia, coma, ptosis and facial palsy. In some cases there occurred combinations of these symptoms (table 1).

The Brudzinski, Babinski and Kernig signs were usually bilateral; occasionally, however, they were unilateral. It should be remembered that the Babinski sign is present in normal infants up to the age of 14 or 16 months, and that it is often difficult to elicit the Kernig sign in young children. Rigidity of the neck is also hard to determine because of voluntary resistance on the part of the child. Ten of the patients had convulsions on entrance to the hospital, and four others gave a history of convulsions before admission.

Hemiplegia, which was present in four patients, was right-sided in two and left-sided in the other two.

Headache was present in all cases in which the patient was old enough to understand the meaning of the term, and could so describe his pain. However, since headache is present in most, if not in all, acute febrile diseases, this symptom was not included among the transitory cerebral manifestations.

It is seen from table 1 that although the signs of meningeal irritation, such as Brudzinski, Babinski and Kernig signs, were most frequent, hemiplegia and ptosis also manifest themselves in transitory form in acute diseases of infants and children.

DURATION OF SYMPTOMS

The duration of the acute transitory cerebral manifestations varied from twenty-four to forty-eight hours. In many cases the cerebral manifestations

From the Children's Hospital of the Cook County Hospital, and the Sarah Morris Hospital for Children of the Michael Reese Hospital.

Read before the Section on Pediatrics at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933:
1. Dupré, E.: Le meningisme, Cong. franc. de méd. 1: 411, 1894.
2. Quincke, H.: Ueber Meningitis serosa, Samml. klin. Vortr., 1893, no. 67, p. 655.

disappeared at the time the primary disease—such as pneumonia or otitis media—developed. In other cases they disappeared twenty-four hours after the development of the primary disease. In a few cases recovery took place in from twelve to twenty-four hours without any disease developing.

UNDERLYING CAUSES

The diseases in which acute transitory cerebral manifestations were present are summarized in table 2. As can be seen, pneumonia occurred most frequently, following which, in the order of their frequency, occurred general grippal infection, or, as I termed it, infection

TABLE 2.—Final Diagnosis in Cases with Acute Transitory Cerebral Manifestations

Pneumonia.....	20
Infection of upper respiratory tract.....	14
Otitis media.....	9
Pyelitis.....	3
Rheumatic fever.....	1
Absence of physical signs.....	3

of the upper respiratory tract, otitis media, pyelitis and rheumatic fever. In three cases no cause could be found for the transitory cerebral manifestations.

It is commonly believed that acute transitory cerebral manifestations, especially meningism, are present most frequently in pneumonia of the right upper lobe. In my cases they were present most frequently in pneumonia of the left lower lobe, and were absent in some cases of pneumonia of the right upper lobe.

BLOOD AND BLOOD PRESSURE

There was a leukocytosis in all the cases, varying from 15,000 to 35,000 with from 70 to 90 per cent polymorphonuclear leukocytes. I expected to find the blood sugar raised in all the cases, because of the presence of an infectious process. However, this was not always the case. The blood sugar was elevated in some cases, and normal in others; the average, however, was higher than normal (table 3).

Attention should be called to the fact that I used the Somogyi method for the determination of blood sugar, which method gives only the dextrose value,

TABLE 3.—Blood Dextrose (Somogyi Method) in Acute Transitory Cerebral Manifestations *

	Lowest	Highest	Average
"Normal".....	45	126	70
Acute transitory cerebral manifestations.....	55	166	85

* Expressed in milligrams per hundred cubic centimeters.

compared to the Folin-Wu method, which gives also the nondextrose-reducing substance. It is possible that if I had used the Folin-Wu method, my blood sugar figures would have been much higher.

Particular attention was paid to the blood calcium in cases in which there were convulsions, with the possibility of connecting the convulsions with a reduction of calcium. However, the calcium was normal in all my cases.

I was unable to study the blood pressure in all my cases, and had to discard my readings in many cases, owing to the resistance of the child. However, in three cases in which no kidney disturbances were present, as proved by negative urinalyses and by normal blood chemistry, the blood pressure was high during the stage

of the acute cerebral manifestations. This opens a new avenue of study in connection with acute transitory cerebral manifestations.

CEREBROSPINAL FLUID

The data in the literature on cerebrospinal fluid in acute transitory cerebral manifestations concern themselves mainly with meningism. Voisin³ performed forty-nine lumbar punctures in forty-five cases of lobar or bronchopneumonia in which there were symptoms of meningism. Forty-four patients had purulent otitis media; there was an increase in cells in eight fluids, the number of cells varying between 11 and 66 per cubic millimeter. Herrick and Dannenberg⁴ found an increase in cells in many of their cases. McLean and McIntosh⁵ studied the cerebrospinal fluid in twenty infants suffering from bronchopneumonia, all of whom had some symptoms of meningeal irritation—such as rigidity of the neck, vomiting, drowsiness, coma or convulsions. The fluid was clear and colorless. In one case

TABLE 4.—Cerebrospinal Fluid Dextrose in Acute Transitory Cerebral Manifestations *

Primary Disease	Cerebrospinal Fluid Sugar
Acute rheumatic fever.....	93
Pneumonia.....	92
Pyelitis.....	91
Respiratory infection.....	88
Infection of upper respiratory tract.....	86, 84
Mastoiditis.....	83
Pneumonia.....	83
Pneumonia.....	82
Pneumonia.....	79
Status epilepticus.....	78
Pyonephrosis.....	76
Pneumonia and otitis media.....	75
Otitis media.....	74
Uremia.....	73, 72, 70
Pharyngitis and otitis media.....	69
Grippal infection.....	64
Subpectoral abscess.....	62
Pneumonia.....	60
Otitis media.....	60
Pneumonia.....	59
Pneumonia.....	54, 53
Pneumonia.....	51
Infection of upper respiratory tract.....	50
Second puncture.....	70
Uremia.....	47
Pneumonia.....	43
Pharyngeal abscess.....	39

* Expressed in milligrams per hundred cubic centimeters.

the globulin was positive, in two cases questionable and in twelve cases negative. The highest cell count was 12, the average count being 4 cells per cubic millimeter. In a former series of cases I⁶ found that the cerebrospinal fluid was increased in amount and in pressure, but not in cells or globulin.

The cerebrospinal fluid in all the cases in this series was increased in amount and pressure. The cellular content and the chemistry of the fluid, however, were not uniform. In most of the cases there was no increase in cells. In five cases, however, there was an increase in cells, varying between 13 and 50 cells per cubic millimeter.

The sugar content of the cerebrospinal fluid has been studied by several workers. Steiner⁷ found a normal

3. Voisin, R.: Les méninges au cours des infections aiguës de l'appareil respiratoire, Paris thesis, 1904, p. 159.

4. Herrick, W. W., and Dannenberg, A. M.: Observations on Cerebrospinal Fluid of Acute Diseases, J. A. M. A. 73: 1321 (Nov. 1) 1919.

5. McLean, S., and McIntosh, R.: Studies of the Cerebrospinal Fluid in Infants and Young Children: The Human Cerebrospinal Fluid, New York, Paul Hoeber, Inc., 1926.

6. Levinson, A.: Qualitative and Quantitative Changes in the Cerebrospinal Fluid of Nervous Diseases and their Significance, Am. J. Dis. Child. 18: 568 (Dec.) 1919.

7. Steiner, B.: Ueber den Zuckergehalt des Liquor cerebrospinalis, Orvosi hetil. 69: 89-91 (No. 5) 1925.

sugar content in meningism. Bokay⁸ found the sugar content normal or higher than normal, in meningism. The sugar content in my cases, as determined by the Somogyi method, was increased in some cases, being as high as 93 mg. per cubic millimeter in one case, was only moderately elevated in other cases, and was normal in still others (table 4). The average dextrose content, as determined by the Somogyi method, was 69 mg. per hundred cubic centimeters, as compared to 55 mg. per hundred cubic centimeters in so-called normal cases⁹ (tables 4 and 5).

In view of the fact that the chlorides in the blood are usually decreased in acute febrile conditions, one

TABLE 5.—*Dextrose in Cerebrospinal Fluid in Acute Transitory Cerebral Manifestations**

	Lowest	Highest	Average
"Normal".....	33	75	55
Acute transitory cerebral manifestations	39	93	69

* Expressed in milligrams per hundred cubic centimeters.

would expect that the chlorides in the cerebrospinal fluid in acute transitory cerebral manifestations would always be decreased. This was found to be so by Fremont-Smith.¹⁰ However, McLean and McIntosh⁵ found the chlorides in meningism within normal range.

The chlorides in the cerebrospinal fluid in my cases varied between 600 and 720, the value being as low as 600 in only one case, which is slightly lower than the lower limit of normal, the rest ranging between 633 and 720 (table 6).

The nonprotein nitrogen was normal except in one case of uremia in which the nonprotein nitrogen was expected to be high because of the uremia and not because of the cerebral manifestations.

DIAGNOSIS

Acute transitory cerebral manifestations have to be differentiated from a variety of conditions, the most important of which are meningitis of all types, encephalitis, acute anterior poliomyelitis, tetany, especially when convulsions occur in a child less than 2 years of age, and epilepsy, especially when there is a history of previous convulsions.

They may also have to be differentiated from brain abscess, brain tumor, sinus thrombosis and cerebral hemorrhage.

No hard and fast rule can be laid down for the differential diagnosis. However, the following points are helpful:

History.—Careful questioning may elicit a history of previous convulsions, which would speak for epilepsy. The history of loss of weight may point to tuberculous meningitis.

Mode of Onset.—An acute onset would speak against a diagnosis of old cerebral hemorrhage, brain tumor, brain abscess or tuberculous meningitis.

Physical Examination.—If the signs of meningeal irritation are constant, it would speak for meningitis. If they are fleeting, or change from minute to minute, acute transitory cerebral manifestations would be indicated. Observation of the patient's posture is helpful.

8. Bokay, Z.: Ueber die diagnostische und prognostische Bedeutung der Bestimmung des Zuckergehaltes im Liquor cerebrospinalis, *Jahrb. f. Kinderh.* 109: 31, 1925.

9. Cohn, D. J.; McCarthy, F., and Levinson, A.: Physiological Variations in the Glucose Ratio of Blood and Cerebrospinal Fluid, *Am. J. Physiol.* 103: 613-619 (March) 1933.

10. Fremont-Smith, Frank: Infections of the Central Nervous System: The Pathogenesis of the Changes in the Cerebrospinal Fluid in Meningitis, *Tr. A. Research Nerv. & Ment. Dis.* 12: 378 (Dec.) 1931.

In most cases of meningitis, the patient lies on his side with his knees drawn up.

I should like to call attention to respiration as a point in the differential diagnosis. I have noticed that in most cases of meningococcus meningitis the respiration is increased either not at all or only slightly. This point may be of value in the differential diagnosis, since in acute transitory cerebral manifestations the respirations are practically always rapid.

The presence of petechiae on the skin or conjunctivae would speak for meningococcemia.

Associated Diseases.—The presence of otitis media or pneumonia would speak against meningitis, although it is possible to have a combination of meningitis and pneumonia.

Course.—The subsidence of the cerebral symptoms within twenty-four to thirty-six hours usually makes a diagnosis possible, although it should be remembered that tuberculous meningitis not infrequently has remissions.

Spinal Puncture.—In some cases spinal puncture must be resorted to. A normal cerebrospinal fluid would speak against meningitis.

Even spinal puncture does not always settle the diagnosis, and the final diagnosis can be made only by the course of the disease, which may take several days. One must therefore be cautious before concluding that the symptoms are only transitory, as the best diagnostician may err in his diagnosis.

TREATMENT

Two extremes of approach to the treatment of acute transitory cerebral manifestations in infants and in children may be noticed. There is the older physician, who, preferring to let nature take her course, is inclined to prescribe no treatment for the child. Then there is the younger physician who will immediately perform a spinal puncture, which he may perhaps repeat in a few hours. There arises the question as to which of these two methods is the correct one.

It would be wrong to generalize the treatment of acute transitory cerebral manifestations, just as it would be incorrect to generalize the treatment of all abdominal conditions. The treatment should depend on the type and severity of the symptoms. If there are only slight

TABLE 6.—*Chlorides in Cerebrospinal Fluid in Acute Transitory Cerebral Manifestations**

	Lowest	Highest	Average
"Normal".....	600	720	690
Acute transitory cerebral manifestations	600	700	667

* Expressed in milligrams per hundred cubic centimeters.

meningeal symptoms, and signs of pneumonia, otitis media or tonsillitis, the treatment should be expectant. If the patient has convulsions, the first thing to do is to try to control them by such means as hot mustard baths, chloral hydrate, whiffs of chloroform and sodium amytal.¹¹ No spinal puncture should be done during the convulsions, for fear of sudden death, although in one of my cases the convulsions did not cease until a spinal puncture had been done. In some cases of repeated convulsions, magnesium sulphate (10 cc. of 10 per cent solution) injected intramuscularly has been found to be of great help in preventing the recurrence of the convulsions.

11. Peterman, M. G.: Convulsions in Childhood: A Study of 419 Cases, *J. A. M. A.* 99: 546-560 (Aug. 13) 1932.

After the convulsions have subsided, a thorough examination may reveal pneumonia or otitis media. If physical examination reveals nothing in the chest, a roentgenogram of the chest may reveal pneumonia.

I should like to call attention to the necessity of examining the skin and conjunctivae for purpuric spots and petechiae, which, in conjunction with acute cerebral manifestations, speak for a meningococcemia. Seven such cases have occurred in my practice this year.

If petechiae are found on the skin, and particularly if they are present on the conjunctivae, a venipuncture should be done, a blood culture taken, and antimeningococcic serum given intravenously. If the meningeal symptoms become more pronounced, serum should then be administered intraspinally.

Large quantities of fluid should be given the patient because of the toxemia and occasional dehydration. Every patient with acute meningo-encephalitic irritation, no matter how transitory that irritation may be, should be watched by the physician with a view to future cerebral manifestations.

VALUE AND LIMITATIONS OF SPINAL PUNCTURE

There naturally arises the question of the value of spinal puncture in the differential diagnosis and treatment of acute transitory cerebral manifestations, for there has been a reaction in the literature against spinal puncture, due in the main to the following: (1) the work of Wegeföth and his associates,¹² who found that the withdrawal of cerebrospinal fluid during septicemia may precipitate meningitis; (2) untoward reactions, such as headache, which have been known to follow spinal puncture,¹³ and (3) occasional accidents.¹⁴

I found the spinal puncture of value in cases with acute transitory cerebral manifestations, both for the purpose of excluding or for detecting an organic disease of the central nervous system. A cerebrospinal fluid that has no marked increase in cells, and no reduction of sugar and chlorides speaks for transitory cerebral manifestations due to a disease in another part of the body. One must remember, however, that at the onset of meningitis the cerebrospinal fluid may be clear.

The greatest benefit derived from spinal puncture in my practice was in cases in which there was an inflammatory condition of the meninges, but in which the meningeal manifestations were mild. A spinal puncture in these cases was the only means of establishing the diagnosis of meningitis or of encephalitis. This was particularly true in infants. As is well known, infants suffering from meningitis often do not present the classic signs of meningitis—at least not to a marked degree. In four of these cases the spinal puncture established the diagnosis; in three of the four antimeningococcic serum was administered, and the patients recovered.

I also investigated the effect of spinal puncture on the course of the disease and found that not only were my patients unharmed by the puncture, but that the meningeal symptoms were relieved rather speedily. In only one case was there a possibility of a harmful effect due to spinal puncture.

The case was one of a meningococcemia with purpuric spots and arthritic symptoms, in which the first puncture yielded clear cerebrospinal fluid, but

more marked meningeal symptoms developed soon afterward. A second puncture yielded turbid fluid containing meningococci. Treatment in this case was contrary to the rule that in all cases in which there is purpura with slight or severe meningeal symptoms, intravenous antimeningococcic serum should be administered and a blood culture should be made before a spinal puncture is performed.

On the other hand, there were cases of meningococcemia in which a spinal puncture was done before the administration of serum without the subsequent development of meningitis.

Excluding the case in which spinal puncture may have been injurious, in all the other cases spinal puncture was of distinct value, or at least did no harm.

I should, however, like to point out that too many body punctures, including spinal punctures, are being done these days. At times it seems as if respect for body cavities and tissue has been lost. This is particularly noticeable as concerns cisternal puncture. On the other hand, if no diagnosis can be made either on physical or on roentgen examination, and the signs of intracranial pressure persist, one must not abstain from doing a spinal puncture because of fear of producing meningitis. If one weighs the danger of spinal puncture against its advantages, in diagnosis and treatment, the advantages outweigh the dangers.

In order to obviate the production of meningitis during septicemia, the recommendation originally made by Wegeföth and his associates—the use of thin needles (from 22 to 24 gage), and the withdrawal of a small amount of fluid—should be followed.

The cerebrospinal fluid should be used for cell counting, bacteriology and sugar determination. However, if the cerebrospinal fluid is turbid, as much as possible should be removed, and antimeningococcic serum should be administered intraspinally. The subsequent punctures may then be done with needles of a larger bore (20 gage).

In this connection, the following quotation from Kolmer¹⁵ is significant:

So far I have never seen any harm following spinal puncture and the slow withdrawal of about 5 cc. of cerebrospinal fluid for diagnostic purposes. When the early signs and symptoms are indicative of a strictly localized meningitis, one naturally wonders if the withdrawal of spinal fluid will favor dissemination of the infection and diagnosis is not infrequently delayed because the physician hesitates to take the chance. I usually measure the pressure with a mercury manometer, as this information alone is of diagnostic value, and withdraw 3 to 5 cc. of fluid (ample for all necessary tests) very slowly and with gradual reduction of pressure. Under these conditions I have never seen any evidence of ill effects.

Nor have I any fear of favoring the localization of streptococci in the meninges from the blood in cases of septicemia by spinal puncture conducted in this way. It may be that the sudden lowering of cerebrospinal fluid pressure by the withdrawal of large amounts of fluid with a large needle may favor the spread of a localized meningeal infection or result in the localization of streptococci from the blood, but with the slow removal of small amounts of fluid neither of these accidents has occurred in my experience.

Indeed I have frequently given dogs and rabbits enormous doses of hemolytic streptococci and type I pneumococci intravenously and have conducted spinal and cisternal punctures with the withdrawal of as much as 0.5 to 1 cc. of cerebrospinal fluid per kilogram of weight (corresponding to 30 to 60 cc. of fluid for an adult) immediately and at varying intervals thereafter without ever succeeding in producing meningitis by

12. Wegeföth, P. and Latham, J. R.: Lumbar Puncture as a Factor in the Causation of Meningitis. *Am. J. M. Sc.* 158: 183 (Aug.) 1919.

13. MacRobert, R. G.: The Cause of Lumbar Puncture Headache. *J. A. M. A.* 70: 1350 (May 11) 1918.

14. Gumprecht, F.: Gefahren bei der Lumbalpunktion, plötzliche Todesfälle darnach. *Deutsche med. Wchnschr.* 28: 386 (June) 1900.

15. Kolmer, J.: Infections of the Central Nervous System: Prophylaxis and Treatment of Meningitis. *Tr. A. Research Nerv. & Ment. Dis.* 12: 503-504 (Dec.) 1931.

localization of the organisms in the meninges even though the organisms were secured by blood cultures for a period of hours after inoculation in the dogs, while the rabbits succumbed to the septemicias within seventy-two hours with positive heart blood cultures.

I believe, therefore, that spinal puncture and the withdrawal of small amounts of cerebrospinal fluid for diagnostic purposes can be made a perfectly safe procedure in the early diagnosis of meningitis and I plead for early examination because of the frequency with which considerable aid is given in diagnosis and especially because early diagnosis and the institution of prompt treatment offer some hope of success, while undue delay with the development of diffuse septic meningitis may result in a well-nigh hopeless situation.

PATHOLOGY AND PATHOLOGIC PHYSIOLOGY

The pathology of acute transitory cerebral manifestations can at best be only speculative, as the patients either recover entirely, or if they do die, death is not due to the cerebral manifestations. The pathology in these cases is therefore based on the interpretation of clinical symptoms.

The main theories as to the existing pathologic process are as follows: hyperemia and edema of the brain, serous meningitis, encephalitis, usually spoken of as toxic encephalitis, and vasomotor disturbances of the cerebral blood vessels.

One theory states that the symptoms are caused by cerebrospinal fluid changes without any meningeal or brain changes.

In addition, the following factors have been suggested as playing some rôle in the production of acute transitory cerebral manifestations: epilepsy, hypoparathyroidism, hyperinsulinism and constitution,

Hyperemia and Edema of the Brain.—There is hardly any question that there is edema of the brain or meninges, as any irritation of the meninges produces an edema. This has been demonstrated by Perlstein and me¹⁶ by the injection of a chemical into the spinal canal. This is evidenced in my cases by the increase in the amount and pressure of the cerebrospinal fluid. Yet in some children, edema of the brain, which undoubtedly exists in many cases of pneumonia, pro-

TABLE 7.—Comparative Cerebrospinal Fluid Dextrose in Meningitis at Onset and Twenty-Four Hours Later*

Type of Meningitis	At Onset	24 Hours Later
.....	100	46
"	99	Too small to determine
"	98	Too small to determine
"	79	41

* Expressed in milligrams per hundred cubic centimeters.

duces no cerebral manifestations, while in others there are marked cerebral phenomena.

Serous Meningitis.—The term "serous meningitis" has been used rather loosely in the literature, especially from a clinical standpoint. The existence of such a pathologic condition has been questioned. The work done by Perlstein and myself¹⁶ has convinced us that chemical irritation, as well as an inflammation, will produce serous meningitis. However, there still remains the question as to whether or not there exists a serous meningitis in acute transitory cerebral manifestations. I originally thought that the normal or increased sugar content in the cerebrospinal fluid would speak against meningitis, as in the latter condition the

sugar content is decreased. I found, however, that the sugar content, which is of great value in the diagnosis of meningitis when it is reduced, does not necessarily rule out meningitis when it is normal or even increased in amount, as in the early stages of meningitis the dextrose in the cerebrospinal fluid may be increased (table 7).

Encephalitis.—There is no evidence that encephalitis exists, but it cannot be ruled out. This is especially true as concerns toxic encephalitis, which has been shown to exist in some acute infections.¹⁷

As far as the lack of cerebrospinal fluid changes is concerned, it is possible for encephalitis to exist without any noticeable changes in the cerebrospinal fluid, if

TABLE 8.—Comparative Cerebrospinal Fluid and Blood Dextrose in Acute Transitory Cerebral Manifestations*

Case	Cerebrospinal Fluid	Blood
1.....	78	91
2.....	76	166
3.....	69	78
4.....	60	87
5.....	59	84
6.....	54	69
7.....	51	55
8.....	50	60
9.....	47	116

* Expressed in milligrams per hundred cubic centimeters.

there is no meningeal reaction. It should be pointed out that cerebrospinal fluid changes reflect only meningeal reaction, so that it is possible to have inflammations of the brain or cord without any cerebrospinal fluid changes.

Vasomotor Changes of the Cranial Blood Vessels.—These changes undoubtedly exist in some cases with acute transitory cerebral manifestations. The question is whether or not they are responsible for the symptoms.

In this connection I studied a series of cases with acute cerebral manifestations that came to necropsy as the result of some cause outside the central nervous system, such as pneumonia or pyelitis. This I thought would duplicate the changes in the brain in persons who recovered with acute cerebral manifestations. In all the cases the brain was hyperemic. No exudate was found grossly, nor perivascular infiltration microscopically. In one case, in which no gross pathologic process (other than hyperemia) was found in the brain or anywhere else, a synostosis of the skull, namely, premature ossification making the skull too small for the brain, was found. In one case pneumonia was found, and in one case no pathologic process was found anywhere in the body.

Cerebrospinal Fluid Factor.—Whether or not there exists any definite pathologic process, the mechanism of the cerebrospinal fluid changes is extremely interesting. According to Fremont-Smith,¹⁸ the increase in pressure may be explained on the basis of the hypotonicity of the blood, which occurs at the onset of many acute infectious diseases, because of dilution of the blood by retention in the body of ingested water. He bases his hypothesis on the work of Weed¹⁹ and of Solomon, Thompson and Pfeiffer,¹⁹ who have shown

17. Grinker, R. R., and Stone, T. T.: Acute Toxic Encephalitis in Childhood: A Clinicopathologic Study of Thirteen Cases, *Arch. Neurol. & Psychiat.* 20: 244-272 (Aug.) 1928.

18. Weed, L. H.: Cerebrospinal Fluid, *Physiol. Rev.* 2: 171-203, 1922.
19. Solomon, H. C.; Thompson, L. J., and Pfeiffer, H. M.: The Therapeutic Applications of the Effect of Hypertonic Solutions on the Cerebrospinal Fluid Pressure: A Critical Review, *J. Nerv. & Ment. Dis.* 59: 474, 1924.

16. Levinson, A., and Perlstein, M. A.: Effects of Intrathecal Administration of Mercurochrome-220 Soluble and of Metaphen, *Arch. Path.* 12: 729-755 (Nov.) 1931.

that whenever the blood is rendered hypotonic, such as by injection of distilled water intravenously, there is a rise in the cerebrospinal fluid pressure.

The increase in sugar may be explained by the increase in blood sugar (table 8).

Epilepsy.—This condition undoubtedly plays a rôle in a small number of cases. Some of my patients did have previous convulsions, although no definite history of epilepsy could be elicited.

Hypoparathyroidism.—The frequency of convulsions in children would lead one to assume that the calcium metabolism may be responsible for this instability. In my cases of acute transitory cerebral manifestations, I was unable to find any lowered blood calcium.

Hyperinsulinism.—This condition is a possibility, though a remote one.

Constitution.—It is well known that the nervous system of children is less stable than that of adults, which would explain why children have transitory cerebral manifestations more frequently than adults. The reason some children have meningeal or encephalitic symptoms with pneumonia or otitis media, while others have not, is to be found, I believe, in constitutional differences. The nervous system of some children will respond to every involvement in the body, no matter how slight, while that of other children will not. The mechanical rôle of synostosis, or premature ossification of the skull, is probably not great, but is rather another manifestation of that constitutional state which predisposes to convulsions.

SUMMARY

1. A study was made of acute transitory cerebral manifestations in infants and in children. The youngest patient was 2 months old, and the oldest, 13 years old. Eighty-two per cent of the patients were boys.

2. Attention is called to the occurrence of ptosis and hemiplegia as transitory manifestations. However, the most frequent symptoms were positive Brudzinski, Babinski and Kernig signs, rigidity of the neck and convulsions.

3. The manifestations usually lasted from twenty-four to forty-eight hours, and then subsided.

4. The underlying causes were pneumonia, infection of the upper respiratory tract, otitis media, pyelitis and rheumatic fever. In three cases no underlying cause could be found. The localization of pneumonia was mainly in the left lower lobe.

5. The blood calcium and phosphorus were normal. The blood sugar was increased in most cases.

6. The cerebrospinal fluid was increased in amount and pressure. The cells were usually normal, and the sugar content was increased in most cases.

7. The cerebrospinal fluid changes are explained by certain blood changes, such as hypotonicity of the blood and increased blood dextrose.

8. Attention is called to the importance of interpreting the cerebrospinal fluid cell count and sugar. A normal cell count indicates no meningeal reaction; an increased cell count signifies some meningeal reaction. A normal or even high sugar, however, does not necessarily rule out an early meningitis, as the cerebrospinal fluid sugar may be increased early in the disease.

9. The diagnosis is difficult. The mode of onset, physical examination, associated disease and the subsidence of the symptoms in from twenty-four to forty-eight hours are helpful. Attention is called to respiration as a point in differential diagnosis from

meningococcus meningitis. The presence of petechiae speaks for meningococcemia.

10. When no diagnosis can be made by clinical examination, a spinal puncture may be resorted to without fear of producing septicemia. A thin needle should be used and a small amount of fluid withdrawn for diagnosis. No spinal puncture should be done during convulsions.

11. The treatment cannot be generalized. In some cases no treatment is necessary. In others spinal puncture must be resorted to. Intramuscular injections of 10 per cent magnesium sulphate have been found of value for the relief of convulsions.

12. The pathologic process, if any, existing in acute transitory cerebral manifestations, cannot be determined because the patients recover. Most likely there are no uniform pathologic changes. Edema of the brain undoubtedly exists in all cases. Constitution may be a factor in the production of the symptoms.

ABSTRACT OF DISCUSSION

DR. M. G. PETERMAN, Milwaukee: I am rather surprised that most of Dr. Levinson's cases, thirty of them, occurred between the ages of 5 and 10 years. A convulsion is the most common and the most serious acute transitory cerebral disturbance to occur in childhood. In my series of over 500 children with acute convulsions, 35 per cent occurred between the ages of 6 and 36 months. I have come to believe that this is the convulsive age, or the age during which cerebral disturbances are by far the most common. I believe that the constitution is not an important factor except, perhaps, in a condition such as epilepsy. An epileptic patient is born potentially epileptic, giving a positive history in over 50 per cent of the cases. On the other hand, those infants who are subject to convulsions have the majority of their convulsions between 6 and 36 months and then go on the rest of their lives without any further manifestations of cerebral disturbances. Those are not the children who develop epilepsy. The predominance of males seems a coincidence. There is no such predominance in my series. Dr. Levinson stated that the children old enough to mention headache all complained of it. I have seen a number of infants who were restless and irritable and pulled at the ears and hair or head, who undoubtedly also had headaches because they were relieved shortly after spinal puncture. Twenty-one per cent of the acute convulsions in my series are due to or are associated with the onset of acute infection. The studies in spasmophilia reveal that the calcium, phosphorus and phosphatase ratio is the most important factor in the precipitation of the acute cerebral disturbances in spasmophilia. As Dr. Gerstenberger has shown today, the acute infections decidedly upset the phosphatase content. This condition may be an important factor in the convulsion. A lack of increase in spinal fluid pressure is not proof of the absence of cerebral edema. The water may be held bound in the tissue. The pathologic condition may be summed up as a vasomotor cerebral reaction. It has been demonstrated that there are vasomotor nerves in the cerebral vessels. In a study of the convulsive state it has been demonstrated that these vasomotor nerves produce anemia, congestion and edema of the brain. The treatment which I believe is indicated is spinal puncture. If the spinal fluid is normal, dehydration therapy may be resorted to. The quickest and the most effective way to treat convulsions is to administer dehydrating agents such as magnesium sulphate, calcium gluconate or dextrose intravenously.

DR. ABRAHAM LEVINSON, Chicago: Convulsions undoubtedly occur with regular frequency, depending on the type of the epidemic and the season of the year. The majority of my cases were seen during the months from October to May, a fact that may account for the fewer number of convulsions noted. Dr. Peterman agreed that a puncture should be done whenever necessary, provided the one doing the puncture knew how to do it. The one performing a spinal puncture should look on it as a surgical operation. The question of acute cerebral manifestations is open to a great deal of study.

Clinical Notes, Suggestions and New Instruments

STREPTOCOCCIC SEPTICEMIA OF HEMATOGENOUS ORIGIN IN A NEW-BORN INFANT

JOSEPH A. RITTER, M.D., AND NATHAN RALPH, M.D. PHILADELPHIA

Recently Dunham¹ reported thirty-nine cases of septicemia in the new-born, fifteen of which were due to the streptococcus organism. Of the latter, fourteen were of the hemolytic group and one was of the nonhemolytic group. In three cases the mother's blood also harbored the streptococci. Dunham's fifteen cases and the eight she found in the literature terminated fatally. Hemorrhage did not occur in any of her cases of streptococcic septicemia, while in our case there was a terminal pulmonary hemorrhage sixteen hours after birth.

The report of this single case is of interest because of the hemorrhage encountered and because of the positive antemortem blood cultures obtained from the mother after positive postmortem cultures were obtained from blood in the heart and lungs of the infant. To show the hematogenous origin of the septicemia, we are including pertinent facts concerning the mother.

REPORT OF CASE

Mrs. A. N., a white primipara, aged 30, was admitted to the maternity service of Dr. John A. McGlinn at the Philadelphia General Hospital at 4:20 a. m., Feb. 18, 1933. The day previous to admission she had chills and fever and complained of sore throat. During the night she perspired profusely and began having labor pains at 1:30 a. m. (three hours before admission). On admission, her temperature was 101, pulse 100 and respiration rate 25. The membranes ruptured at 11:15 a. m. At 4:20 p. m., under nitrous oxide anesthesia, an episiotomy was done and she was delivered by outlet forceps without any difficulty. The placenta was delivered complete at 5:15.

The infant, a girl, breathed spontaneously and weighed 7 pounds and 5 ounces (3,317 Gm.). Nothing abnormal was discerned. Jaundice was not visible. The next morning, February 19, cyanosis was detected. At 10 a. m. the infant had a profuse hemorrhage from the nose and mouth and died. The rectal temperature was never above 99.8. Two hours after death an autopsy was performed² and, under aseptic conditions, dextrose-broth cultures were made from one of the consolidated areas of the lungs and from blood obtained by heart puncture. A pure growth of *Streptococcus haemolyticus* was obtained in twenty-four hours from both the heart blood and the lung.³ Toxic changes were noted in the viscera and a marked hemorrhagic pneumonitis was present in the right middle and both lower lobes. Microscopic examination revealed toxic hepatitis, acute passive congestion of the kidneys and bowel and follicular hyperplasia of the spleen.

The mother continued to have chills, her temperature ranging from 100 to 104 F., sore throat and moderately injected tonsils. Throat culture revealed *Bacillus influenzae*, *Streptococcus viridans*, *Staphylococcus aureus* and *Micrococcus catarrhalis*. Nothing pathologic was found in the chest. Tenderness was present over the uterus and flanks. Two days after delivery, definite signs of peritonitis were present with marked distention and vomiting. Pelvic examination was negative. The lochia was not foul and the uterine bleeding not abnormal. Because of the report of a positive postmortem blood culture of the infant, a blood culture in dextrose-broth was taken from the mother, February 20. A pure growth of *Streptococcus haemolyticus* was reported within twenty-four hours. A pour-plate (1 cc. of the patient's blood [citratd] on blood agar) taken the same day as the dextrose-broth culture, showed a growth of 50 colonies of *Streptococcus haemolyticus* per cubic centimeter of patient's blood.

From the Nursery and Obstetrical Divisions of the Philadelphia General Hospital.

1. Dunham, Ethel C.: *Septicemia in the New-Born*, Am. J. Dis. Child, 45: 229 (Feb.) 1933.

2. Drs. R. P. Custer and Herbert Lund of the department of pathology performed the postmortem examinations.

3. Miss E. M. Murphy did the bacteriologic studies.

February 21, a nonspecific immunotransfusion⁴ of 350 cc. of blood was given by the direct method. February 24, a blood culture was repeated and five days later was positive for *Streptococcus haemolyticus* in the dextrose-broth, the pour-plate being negative. The immunotransfusion was repeated, February 25. The patient died the next day.

An autopsy was performed three hours after death. A generalized peritonitis was found, with about a liter of free pus in the peritoneal cavity, perisalpingitis, old chronic appendicitis and a marked parametritis. A microscopic section of the cervix revealed small recent abscess formation. The viscera showed toxic changes. The lungs presented terminal congestion and edema. Cultures of the peritoneal fluid were contaminated.

COMMENT

A positive proof of septicemia in the mother before or during delivery is not available, as cultures of the mother's blood were not taken before the infant's death. The clinical history, however, is in favor of the presence of septicemia in the mother before delivery. We believe the infection in the infant occurred through the placental circulation. The site of the primary focus in the mother can only be conjectured. One may doubt, as proof of an antemortem infection, the positive postmortem blood culture. Dunham¹ gave as positive evidence of antemortem infection of the blood stream the growth of organisms in deep colonies in plates as well as in broth cultures, if the cultures were made by heart puncture immediately after death. In our case the postmortem heart puncture was made two hours after death and the organisms were grown in dextrose-broth. Yippö⁵ considered septicemia as the cause of death in twelve of twenty-nine premature infants, from whose blood, obtained by heart puncture immediately after death, organisms were grown. The fact that in our case both postmortem cultures of the infant and both antemortem cultures of the mother were positive for *Streptococcus haemolyticus*, and for that organism alone, would seem to us to be conclusive evidence of septicemia in the infant of hematogenous origin.

The negative pour-plate obtained after a nonspecific immunotransfusion is significant. Specific⁶ and nonspecific immunotransfusions before and after delivery may be useful therapy to combat the high maternal and neonatal mortality in septicemia and deserves further trial and investigation.

Fifty-Fourth Street and Gainor Road.

DIFFERENTIATION OF PREGNANCY AND HYDATIDIFORM MOLE

M. Y. DABNEY, M.D.; GEORGE GRAHAM FLINN, M.D., AND EUGENIA B. DABNEY, M.S., BIRMINGHAM, ALA.

Clinically, hydatidiform mole is suspected in cases of bleeding during the first trimester of pregnancy, associated with disproportionate enlargement of the uterus.¹ In pregnancy, of course, rest and waiting are the prescribed treatment for bleeding. In hydatidiform mole, the uterus should be emptied immediately, irradiated, and possibly removed.

Hormone studies from several sources recently have indicated another diagnostic point: in hydatidiform mole and chorion-epithelioma there is a greatly increased concentration of anterior pituitary sex hormone in the urine.² Mazer and Goldstein³ say:

"Aschheim obtained a positive pregnancy reaction in a case of hydatidiform mole with one-twelfth the amount of urine usually necessary to secure such a reaction. Reeb states that the amount of anterior pituitary hormone excreted in cases of hydatidiform mole and chorionepithelioma is from 10 to 500

4. Stephenson, Ruth: *Nonspecific Immunotransfusions in Hemolytic Streptococcus Septicemia*, J. A. M. A. 100: 100 (Jan. 14) 1933.

5. Yippö, A.: *Zschr. f. Kinderh.* 20: 371, 1919, cited by Dunham.¹

6. Brody, William, and Crocker, W. J.: *Specific Immunotransfusion in the Treatment of Septicemia*, J. A. M. A. 98: 2191 (June 18) 1932.

1. Mazer, Charles, and Goldstein, Leopold: *Clinical Endocrinology of the Female*, Philadelphia, W. B. Saunders Company, 1932.

2. Novak, Emil, and Koff, A. K.: *The Ovarian and Pituitary Changes Associated with Hydatidiform Mole and Chorionepithelioma*, Am. J. Obst. & Gynec. 20: 431 (Oct.) 1930.

3. Mazer and Goldstein: *Clinical Endocrinology of the Female*, pp. 403-404.

times that excreted during normal pregnancy. . . . In cases of bleeding during the first trimester of pregnancy associated with disproportionate enlargement of the uterus, the patient's urine should be diluted about ten or twelve times with water before it is injected into the test animals. If a positive reaction is obtained with this dilution, the diagnosis of hydatidiform mole is usually certain."

The following is a report of a case of suspected hydatidiform mole, with quantitative studies of the urinary content of anterior pituitary sex hormone:

REPORT OF CASE

Mrs. M. H., aged 28, white, mother of one living child, entered the Hillman Hospital, Oct. 25, 1932. The previous menstrual period began June 15, four and one-third months before admission. There had been intermittent bleeding since the latter part of August. Examination showed carious teeth and a marked anemia, with 40 per cent hemoglobin and 2,560,000 red cells. Routine urinalysis and the blood Wassermann reaction were negative, as were all other tests.

The fundus of the uterus extended to the umbilical level, an enlargement in advance of the menstrual history according to the attending obstetrician, Dr. T. M. Boulware. No fetal parts could be outlined, no fetal movements were felt or seen, and no fetal heart could be heard. The patient herself had felt no movements. Mole was suspected.

Following roentgen examination, October 25 and again November 6, a large soft tissue tumor was reported, with no evidence of a fetus.

The Friedman pregnancy test was done, a number of rabbits and varying quantities of urine being employed. Mazer and Goldstein recommend the injection of 10 cc. of urine into the ear vein of the rabbit on two successive days. Twenty cubic centimeters is the amount suggested for routine use. If one tenth or one twelfth of this quantity gives a positive result, mole is to be expected.

In each test, a preliminary laparotomy was done to examine the animal's ovaries before any injections were made. The test was strongly positive after 30 cc. of urine. It was positive after 2 cc. It was also positive in twenty-four hours after 0.5 cc. It was likewise positive in forty-eight hours after 0.4 cc. This rabbit was not examined after twenty-four hours, or this test might also have proved positive even earlier. The test was twice negative after injection of 0.2 cc. One fiftieth of the usual amount of urine gave positive results in this case (0.4 cc. as contrasted with the usual amount, 20 cc.).

Friedman Pregnancy Tests

Rabbit No.	Weight, Gm.	Date of First Injection	Quantity of Urine, Cc.	Date of Second Injection	Quantity of Urine, Cc.	Results
1	3,808	10/28/32	15	10/29/32	15	Pos. 10/30
2	2,429	10/31/32	1	11/ 1	1	Pos. 11/ 2
3	3,390	11/ 4/32	0.5	None	..	Pos. 11/ 5
4	3,722	11/ 3/32	0.2	11/ 4	0.2	Pos. 11/ 5
5	2,746	11/12/32	0.1	11/13	0.1	Neg. 11/14
6	4,576	11/ 9/32	0.1	11/10	0.1	Neg. 11/11
7	(Aborted 5½-month fetus 11/10/32) 2,712	5/18/33	10	5/19/33	10	Neg. 5/20

Hydatidiform mole was diagnosed by Drs. Boulware and Dabney but was not concurred in by Dr. Frank Lupton. The patient continued to bleed, but operation was not performed. November 10, she spontaneously delivered herself of a dead five and one-half months female fetus, with membranes intact.

Recovery was uneventful and the patient was discharged, November 14, in fair condition. A pregnancy test of the urine was also done about six months post partum, a total of 30 cc. of urine being employed. The result was negative.

COMMENT

This case is of importance because in the light of recent hormone studies the diagnosis of hydatidiform mole was justifiable. If operative intervention had been undertaken, it might have occasioned some embarrassment to the physicians. The need is suggested of revision of existing laboratory criteria for the diagnosis of hydatidiform mole and chorionepithelioma.

The case is of further interest from a physiologic standpoint because of the unusually large quantity of anterior pituitary

sex hormone demonstrated in the urine shortly before abortion of a nonviable fetus. It is possible that abnormal excretion of this hormone regularly accompanies fetal death without complete detachment of the placenta or that the increased quantity of hormone itself brings about defective fetal development and miscarriage and should be an indication for emptying the uterus in pregnancy, when it is not a sign of hydatidiform mole or chorionepithelioma. If this laboratory finding had been taken as an indication for therapeutic abortion, the present patient, a very anemic woman, would have been spared over a week of bleeding.

Further quantitative hormone studies in cases of threatened abortion and dead fetus are desirable.

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Special Article

DIAGNOSIS AND TREATMENT OF INJURIES OF THE HEAD

WALTER E. DANDY, M.D.

BALTIMORE

In evaluating injuries of the head, I need hardly emphasize the fact that the alterations in the skull are of relatively minor concern. Life, at least, is at stake only through the changes produced on the intracranial contents; i. e., the brain and its blood vessels. And yet textbooks still classify injuries of the head as fractures of the vault and base, as simple or compound, and as linear or depressed. This nomenclature is the heritage of a past era when the true effects of injuries of the brain were little known. Moreover, every surgical attention was directed to the skull, for, owing to sepsis, the dura was the patient's last line of defense against the attack of surgeons. A hundred years ago the accepted form of treatment of one school of surgeons, led by the illustrious Pott, was to follow every line of fracture to its terminus (when possible) and to remove frequent buttons of bone en route in an effort to permit the inflammation (now known to be infections) to escape. Even now, one occasionally sees fissures in the bone laid bare by an enthusiast who doubtless seeks a pot of gold at the end of a rainbow. But scarcely less absurd, though less destructive, is the search by x-rays for the ultimate details of cracks in the skull. Diagnoses of cranial injuries are made or excluded by the x-rays, and compensation is allowed by these observations. Such is even now the rule and not the exception. A physician is considered negligent if roentgenograms of the skull are not made, although they are of almost no service in acute injuries of the head; they are a waste of money, a misdirection of diagnostic effort, and only too frequently, if transportation is required, a critical tax on a seriously ill patient. It is only in the better disclosure of depressed fractures of the skull—the one most important concern in the bone—that x-rays are helpful, but even here inspection and palpation are almost as satisfactory.

Efforts to standardize treatment for injuries of the head encounter insuperable difficulties, and statistics in support of any so-called standardized form of treatment are valueless because of the extreme variability in the severity of injuries and of their effects. That standardization, when based on facts, is in general an

Clinical lecture, read at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 13, 1933. For a more comprehensive report of the writer's views on injuries of the head, the reader is referred to volume XII of Dean Lewis's *System of Surgery*.

advance cannot be doubted. It perhaps offers the greatest good to the greatest number and therefore protects patients against the inferior judgment. But, at best, standardization indicates mediocrity; and the less certain the facts and the more uncertain the fancies, and the greater the variations in individual abilities, the lower the standard must be. The highest goal will always be attained by the most intensive studies of each case as an individual, and by the best men; in other words, by regarding, both in diagnosis and in treatment, each case as a law unto itself. Particularly is this true of injuries of the head. Many patients will be lost in the effort to diagnose and treat all alike; many will be saved by constantly scrutinizing every detail in the illness and thus knowing the exact condition of the patient at every moment and the best treatment in each contingency. The question may be asked: What constitutes this careful study? At present there is unquestionably a strong trend toward the greater use of laboratory methods, particularly lumbar punctures and the x-rays; and in most of the large institutions where efforts at standardization may be considered advisable, these procedures are offered practically to the exclusion of the old-fashioned bedside studies; i. e., the clinical method.

Of the futility and even harm of x-rays I have spoken. But lumbar punctures are far too dangerous to be offered as a diagnostic aid, particularly when they offer almost nothing of value in diagnosis. It is quite true that a lumbar puncture will indicate intracranial pressure, even its degree, but not with greater certainty than by careful studies of the patient. Why, then, use a dangerous method when a safe one better serves the purpose?

The effects of injuries of the head are both immediate and late. During the stage of cerebral injury the first concern is for the preservation of life; the second, for preservation of function. In acute stages, life is lost almost entirely because of intracranial pressure; and intracranial pressure in turn is due to (1) hemorrhage and (2) edema. At the moment of injury the brain is thrust with varying degrees of force against the sides of the skull. The end result is precisely similar to any other traumatized soft tissue; namely, swelling due to hemorrhage and edema in varying proportions. The swelling may be all blood or all fluid but is usually due to varying proportions of the two. Nature's method of combating this new increased volume within the closed cranial chamber is to withdraw fluid from the ventricular system and the subarachnoid spaces and send it into the blood. Space compensation is the principal function of cerebrospinal fluid. Indeed, without compensation of space by cerebrospinal fluid, life could not exist after even trivial cerebral injuries. Similarly this is the explanation of the large size which brain tumors attain before causing symptoms and eventually death. If the intracranial pressure passes beyond the point at which nature's efforts are exhausted, death must then ensue because the cranial chamber is inexpandable.

The main diagnostic service of the physician during the acute stage is to know as accurately as possible how fully nature is compensating for the increased intracranial pressure, and particularly to know when a serious state of distress is being reached, i. e., when compensation is breaking; for it is at this stage that treatment, if necessary, is imperative. This clinical judgment is based on the results of the following observations: (1) state of consciousness, (2) restlessness,

(3) involuntary micturition or defecation, (4) the rate and quality of the pulse and (5) respirations, and (6) the temperature.

The state of consciousness is by far the most important of all objective data. It is obvious that, if a patient is unconscious, he has intracranial pressure beyond a certain degree of compensation which may be considered the margin of safety. When coma deepens, no other information is required to disclose the fact that the patient is becoming worse; and, conversely, if the state of consciousness improves, the patient is improving correspondingly. Similarly, involuntary urination or defecation indicates an alarming degree of intracranial pressure. At times, loss of sphincter control will appear when the patient is fairly conscious; but usually all these functions are more or less simultaneously affected.

Restlessness (when it appears) is one of the most valuable signs, because it serves as a warning that coma is near at hand. To subdue restlessness with morphine is as hazardous as masking pain in abdominal lesions.

As long as the intracranial pressure is being compensated, the pulse will remain slow and regular. During the period of bradycardia there is usually no need for action. When compensation begins to break, the pulse rises and becomes variable in both rate and volume. With each additional advance in tachycardia the patient's condition becomes more critical. A pulse of 60 one minute and 100 the next indicates a losing struggle for compensation.

The respirations behave much similarly. During the period of compensation they too remain slow and regular, and as compensation is broken they become more rapid, shallow and irregular; irregular and Cheyne-Stokes respirations are evidence of an advanced stage of intracranial pressure.

The change in temperature will usually prove to be an even more sensitive indicator of the state of intracranial pressure. The rectal temperature should be taken repeatedly—at least every fifteen to twenty minutes—during the period of danger. When the temperature remains below 101.5 or 102 F., the pressure is being compensated; each additional degree above this places the patient in increasing danger.

The blood pressure, usually regarded as an important index, I have found to be of little value.

TREATMENT OF ACUTE INJURIES OF THE HEAD

If the skin is broken, the wound should be immediately cleansed and devitalized tissues excised (if the patient's condition permits) and closed in order to avoid infection, which will almost surely follow if left untreated. All depressed fractures of any magnitude should be elevated, but not until life is safe. The first concern in acute injuries of the head is always the preservation of life, and one must refrain from all treatment that may lessen the chances of survival.

TREATMENT OF ACUTE INTRACRANIAL PRESSURE

In only one result of acute injuries of the head is it possible to remove the cause; namely, extradural hemorrhage. In all other instances the effect of the injury, namely, intracranial pressure, is treated. Extradural hemorrhage requires evacuation of the hematoma and ligation of the bleeding artery. This is a procedure of no difficulty and is entirely safe as long as the patient's condition is satisfactory. Since an extradural hemorrhage usually progresses rapidly and may be fatal in

a few hours, it is incumbent that a correct diagnosis be made as early as possible in order that this life-saving procedure may be available. Every effort is therefore made to subtract extradural hemorrhages from all other intracranial injuries. They are suspected by a free lucid interval between the initial and a subsequent loss of consciousness. Usually the patient will be stunned for a few moments, get up and walk about; then in perhaps half an hour to an hour later coma will again supervene and steadily deepen. This is not a pathognomonic sign of an extradural hemorrhage but it is a very good indication. Not infrequently there will also be gradually increasing motor weakness of the opposite side of the body, always beginning in the face and then extending to the arm and frequently to the leg, though the leg may not be reached. Convulsions too may develop, and in the same order, namely, the face, arm and leg. This order is due to the arrangement of the motor cortex, the face area being nearest the extradural hemorrhage, which is toward the base of the skull. Though the mortality of extradural hemorrhages when left alone is very great, spontaneous recovery is not infrequent; but the incidence of epilepsy in spontaneous cures is very high.

TREATMENT OF ACUTE INTRACRANIAL PRESSURE NOT DUE TO EXTRADURAL HEMORRHAGE

Cases of acute intracranial pressure not due to extradural hemorrhage comprise the great bulk of acute intracranial injuries, and it is here that the greatest differences in treatment are in vogue. If a poll of the physicians were taken I should venture the assertion that nine out of ten would use either lumbar punctures or intravenous injections of hypertonic solutions or both, and yet both of these practices may be extremely harmful. Both indeed sound like scientific contributions, and such they are in their proper places in the laboratory; but certainly in patients with severe injuries of the head they are productive of great danger to life. I feel quite confident that no patient has been saved by either method, and certainly many have been lost who otherwise might have survived. When pressure obtains, one cannot perform a lumbar puncture without producing trauma to the brain. It is quite true that there is an immediate beneficial response, but this later fades away into an even deeper coma if the intracranial pressure is of high grade. Precisely the same conditions of procedure are encountered in pressure from brain tumors and in this field the risks attending lumbar punctures have been learned.

If a patient by any chance has an extradural hemorrhage or a subdural hemorrhage, a lumbar puncture is the very worst thing that can be done, particularly in the former. The only method by which nature can stop bleeding is by compressing the dura against the hematoma and the skull. As soon as the pressure is relieved by lumbar punctures or other means, it gives more room for the hemorrhage to develop anew; for, with each additional stripping of the dura, more branches of the middle meningeal artery are torn.

The use of intravenous injections of dextrose has similar objections. Moreover, one cannot introduce solutions of this concentration without having subsequent adverse chemical reactions in the brain, and these only add to the original intracranial pressure.

The only treatment, if such it may be called, that I employ up to a certain point in acute injuries of the head is absolute rest. Give nature a chance, and 70 per cent of all patients with severe injuries will recover

spontaneously. If left alone, the remaining 30 per cent will die. From this group perhaps one third (one tenth of the total injuries) can be saved by subtemporal decompression if well timed and properly performed. The remaining 20 per cent (of the total) must be regarded as beyond redemption by any rational means available. If a patient dies within the first five or six hours, there is no possibility of saving him by an operation—the one exception to this rule is an extradural hemorrhage. If at the end of five or six hours consciousness improves or remains unchanged and pulse, respirations and blood pressure remain within the limits of compensation, the chances of a spontaneous recovery are good. If after this arbitrary period coma deepens and other signs indicate a break in compensation, recovery is practically impossible except for constant relief of pressure. This can be obtained only by a subtemporal decompression. The longer compensation persists after the primary interval of five or six hours (up to a certain limit that denotes chronicity), the better are the chances of spontaneous recovery or recovery through decompression.

Summed up, the treatment which I should suggest is to do the least possible, keeping the patient absolutely quiet, avoiding roentgen and other disturbing tests, and by all means avoiding lumbar punctures and intravenous injections of dextrose or sodium chloride. The patient should be carefully and constantly studied for signs of broken compensation due to increasing intracranial pressure and finally, when necessary—perhaps in 10 per cent or less of the cases—one should do a right subtemporal decompression under local anesthesia.

LATE EFFECTS OF CRANIAL INJURIES

The fact that the patient quickly recovers from the immediate effects of an injury does not by any means indicate that his troubles are past. There are several late effects which I shall mention but briefly. Post-traumatic neurosis is by far the most common sequel. This is not dependent on the severity of the injury; in fact, it usually occurs in those of minor type. Often a disturbing diagnosis because of the varied and persistent symptoms, it nevertheless is usually easy to differentiate from organic lesions.

Epilepsy probably is next in frequency. Any cranial injury of severity is a potential source of convulsions, but to cause convulsions the injury to the brain must be due either to some focal lesion, such as a depressed fracture, or to a generalized injury of the brain, in which the loss of consciousness has persisted for several hours. Except when due to a depressed fracture, the convulsions usually begin within a year and a half to two years after the injury; those due to a focal injury may occur at any time. For medicolegal reasons it is necessary to evaluate injuries very carefully before estimating the causal relationship.

If meningitis develops, it will appear within the first few days—usually within the first forty-eight hours after the injury. It is due to the ingress of an infection through a crack which runs through the infected paranasal or mastoid sinuses. Cisternal drainage will save a certain number of the nonpurulent meningitides due to *Staphylococcus aureus* or streptococcus.

Brain abscess results from compound fractures that are directly over the brain substance and not over the beds of cerebrospinal fluid. They offer good prognosis with proper treatment.

Pneumocephalus is a rather infrequent complication. Through a break in the skull and dura over the para-

nasal sinuses, air is forced into the brain by straining, sneezing or coughing. The air may enter the sub-arachnoid space, the subdural space or the frontal lobe; the exact position of the air depends on whether fluid or brain tissue lies immediately beneath the bony opening and whether or not the trauma has broken through the leptomeninges. Large air cavities in the frontal lobes may eventually rupture into the lateral ventricle and thus produce spontaneous ventriculograms. Symptoms of intracranial pressure usually develop and may persist for many weeks before terminating fatally. Diagnosis is made by the periodic discharge of cerebrospinal fluid when the head is bent forward. An absolute diagnosis may also be made by the x-rays. Pneumocephalus is practically the only complication of a cranial injury in which the x-rays are of value, and here the presence of air shadows is pathognomonic. Occasionally, pneumocephalus may heal spontaneously. If the fistula is obliterated by increasing granulation tissue, the remaining air absorbs spontaneously. Usually, however, infection ensues and death will follow from abscess of the frontal lobe or meningitis. If infection is not yet present, practically all these cases can be cured by closing the fistula in the dura with a transplant of fascia.

Arteriovenous aneurysms between the carotid artery and the cavernous sinuses are not uncommon. The carotid artery passes directly through the cavernous sinus. When the artery is torn, an arterial fistula opens into the cavernous sinus, producing an arteriovenous aneurysm. This prevents the patient from dying of hemorrhage but induces a characteristic bulging of the eyeball, edema of the conjunctiva, papilledema of high grade, a murmur audible to the patient and to the examiner, and usually limitation of the ocular movements. This condition is easily cured by either partial or complete ligation of the internal carotid artery. After the age of 35, total ligation of the artery is dangerous. A partial occlusion of the artery with a band of fascia is just as effective as a complete ligation. At times an aneurysm produces identical effects in the two eyes. Bilateral arteriovenous aneurysms are due to the fact that both cavernous sinuses are directly continuous through a communicating branch. Both sides are cured by the ligation—partial or complete—of the internal carotid artery on the affected side.

The remaining and most important sequelae of cranial injuries are (1) subdural hematoma and (2) subdural hydroma, due to a large collection or collections of blood or fluid, respectively. Either may follow trivial injuries or those of greater severity. A subdural hematoma is of tremendous size, usually covering most of a cerebral hemisphere and to a depth of $1\frac{1}{2}$ or 2 inches or more. It is usually due to a tear in a vein as it crosses from the cerebral hemisphere to the longitudinal sinus. The hemorrhage, being of venous origin, stops spontaneously when the intracranial pressure becomes great enough to obliterate the open vein. The blood becomes encapsulated and acts as a tumor; it merely dislocates the brain and, except in unusual cases, causes few or even no symptoms except those of intracranial pressure; not infrequently the symptoms are equivocal—or subjective rather than objective. The diagnosis is usually made solely by ventriculography. If a tumor or hematoma is suspected, the character and location of the lesion can be made unequivocally and without risk. The cure is easily obtained by evacuating the hematoma and removing its membranes in part.

Subdural hydroma is quite similar to hematoma in every respect, except that there is a collection of fluid instead of blood. The fluid passes through a tear in the arachnoid membrane and collects in the subdural space, where it cannot be absorbed. It too becomes encapsulated. A subdural hydroma may be cured by evacuating the fluid through a small perforator opening.

CONCLUSION

Absolute rest is the most important assistance that can be made to nature's efforts to compensate for increased intracranial pressure. By careful and frequent bedside observations one can know at all times the state of intracranial pressure and can in most instances subtract the important group of extradural hematomas from the remaining cases. All unnecessary and harmful or potentially harmful treatments should be avoided, even though relatives expect and urge something to be done. One will be told by enthusiasts of lumbar puncture and dehydration that, if fluid is not repeatedly withdrawn from the cranial chamber, one will be responsible for the later sequelae. One's conscience need not suffer on this account. Any after-effects—such as epilepsy—are due to the cerebral injury at the time of the accident. Conservative treatment adds not one iota to the later complications.

When nature shows unequivocal signs of failure, the only remaining rational treatment is to provide more room by a subtemporal decompression, the effects of which persist through the illness. A decompression is used only in selected cases in which the patients have survived six hours or more and are then in decline—less than 10 per cent of all cases. I am well aware of the fact that at no time have the results in treating cranial injuries been so bad as when ill timed and poorly performed decompressions were in vogue and in many places almost a routine. I should greatly deplore the inference that the suggestions here presented would restore those distressing results which represented the worst as well as the best in clinical judgment and in operative skill. Such were and will continue to be the results of any effort at standardization of exceedingly difficult problems in diagnosis and treatment. Results will never be measured by the application of methods but by the quality of the men who apply these methods. I therefore refer only to the superior results that are attainable by a combination of the best in diagnosis and the best in treatment.

A general impression prevails that any one can handle injuries of the head, especially with the use of lumbar puncture and dehydration. On the contrary, there are few fields in which the most careful and persisting study and critical judgment are more necessary to attain the maximum results. Changes in the patient's condition frequently appear so quickly and the period in which favorable action is possible is so brief that life may truly hang by a slender thread, the breaking or strengthening of which is dependent on the quality of the physician's care and skill. By quality is not necessarily meant specialists but experts—those using the best clinical judgment (which is usually dictated by common sense) and the best technical ability.

In the late sequelae of cranial injuries, an accurate diagnosis is an absolute prerequisite to the required form of treatment. Excepting inflammations, they offer a high percentage of complete recoveries and with very little risk.

Johns Hopkins Hospital.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.
H. A. CARTER, Secretary.

THE EXAMINATION OF DIATHERMY MACHINES FOR LOCAL DIATHERMY TREATMENTS

AND REQUIREMENTS FOR ACCEPTANCE OF THESE MACHINES BY THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION

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MINNEAPOLIS

A clear distinction is necessary between the different uses of diathermy machines. There are machines for surgical use with appliances for electrodesiccation and machines for "general" and "local" diathermy. Under "local" diathermy will be included treatments of the trunk and extremities in which only a local section is heated, such as the shoulder, knee or ankle. "General" diathermy will be reserved for machines with a larger power output, when the temperature of the whole or a large part of the body is to be heated rapidly. But machines for local diathermy may be used to produce rise in general body temperature, if sufficient precautions are taken to prevent loss of heat from the patient.

In a diathermy treatment it will be tacitly assumed that the sole therapeutic benefit results from the production of an increased temperature of the tissues treated. It will be required that in any diathermy treatment there will be no electrical stimulation of any neuromuscular mechanism whereby a sensation of pain or shock results. This requires that the frequency of the diathermy current be sufficiently high to prevent electrical stimulation and that associated with the high frequency current there will be no low frequency surges of current, due to defects of the machine, which will excite the neuromuscular system. It will be required also that the machine be so constructed that there will be a regulator, which will adjust the voltage across the primary of the low frequency transformer in steps such that a wide spark gap interval is unnecessary. The machine must be so assembled as to insure (a) convenience of operation, inspection and repair, (b) ability to withstand moderately rough usage, as movement around a hospital, and (c) complete safety of patient and operator from burns and shock, considering of course, in the latter case, faulty technic of treatment.

In making more detailed recommendations, I will keep the foregoing considerations in mind as well as information obtained from previous research,¹ and from

clinical experience. In many cases definite experimental knowledge is lacking and when this deficiency occurs mention will be made of the fact and the most reasonable explanation given on the basis of physiology and physics. The attempt to standardize and approve diathermy machines for medical practice is a new undertaking, and recommendations must be based on long experience and carefully controlled quantitative experiments. This will require accurate records of past observations on the technic of diathermy and will require cooperation between the clinician, the manufacturer and the medical research worker. It is not to be assumed that the report will be final; it will be of necessity modified by clinical and experimental observations of the future.

Diathermy machines of different makes have differences in construction and each presents its own special problem when it is to be examined for approval for medical use. While the following recommendations will serve as a guide for the investigator to follow, it must be remembered that certain individual characteristics will be encountered which will be both advantageous and disadvantageous for clinical purposes. A discussion of these will, of course, be apart from the general consideration given. In these cases the investigator must use his own judgment or his own tests on which to base his reasons for recommendation or non-recommendation.

THE TYPICAL DIATHERMY MACHINE

In the following discussion the different parts of the typical diathermy machine will be considered separately. Finally a discussion of the whole assembly will be given.

1. *The Low Frequency Transformer.*—In an examination of the low frequency transformer, consideration will be given to the following points:

- (a) Size and insulation of wire in primary and secondary currents.
- (b) Turn ratio and number of turns of primary and secondary.
- (c) Insulation of primary and secondary from each other and insulation of layers of secondary.
- (d) Iron of core, size, laminations, and so on.
- (e) Position and attachment of transformer in the machine. The transformer must be securely bolted to the framework.
- (f) Insulation of high voltage leads from secondary. These must be well insulated at all connections and must not come in contact with other wires of the circuit.
- (g) The maximum power output without undue heating.
- (h) Observation of operation of transformer for a considerable period with maximum high frequency energy output.

2. *Voltage Regulator.*—In series with the primary circuit of the transformer there is a reactance or resistance which can be varied and which varies the voltage drop across the primary of the transformer. This is usually in the form of an auto transformer. The insulation, attachment, size of wire, heat loss during operation, and the like, would be examined as for the transformer. Other matters to be considered are:

- (a) The number of contacts on regulator.
- (b) Mechanical construction of contacts—material used, spacing, and so on.
- (c) Insulation of wires especially to movable parts.
- (d) Availability for cleaning, protection from dust, and so on.
- (e) Insulation and construction of operating lever or dial.
- (f) Test to determine whether the high frequency energy output can be varied continuously from a high to a low value without excessive widening of the spark gaps.

1. The data have been presented in the following articles:
Stenstrom, Wilhelm, and Nurnberger, Paul: Effect of Diathermy Treatments on Temperature, *Arch. Int. Med.* **44**: 556 (Oct.) 1929.
Hemingway, Allan: Thermal Effect of Diathermy, *Radiology* **14**: 99 (Feb.) 1930.
Hemingway, Allan: Peak Voltage Measurement in Diathermy, *Radiology* **15**: 670 (Dec.) 1930.
Hemingway, Allan, and Hansen, C. O.: Temperature Distribution in Local Diathermy Treatments, *Radiology* **17**: 1258 (Dec.) 1931.
Hemingway, Allan: Surface Heating with Two Types of Diathermy Electrodes, *J. Lab. & Clin. Med.* **16**: 271 (Dec.) 1930.
Hemingway, Allan, and Collins, Dean: Temperature Distribution with Different Diathermy Electrodes, *Arch. Phys. Therapy* **12**: 517 (Sept.) 1931.
Hemingway, Allan, and Stenstrom, W. K.: Physical Characteristics of High Frequency Currents, *J. A. M. A.* **98**: 1446 (April 23) 1932.
Hemingway, Allan and McClendon, J. F.: The High Frequency Resistance of Human Tissue, *Am. J. Physiol.* **102**: 56 (Oct.) 1932.

3. *Low Frequency Leads and Connections; Switches.*—It is essential that the low frequency leads from the main be well insulated and of sturdy construction. The connection to the machine should be in a convenient place for operation.

The switches, both hand and foot, should be of good mechanical construction, well insulated and conveniently placed.

4. *Spark Gaps.*—The number of spark gaps on diathermy machines varies from four to eight. To my knowledge there is no evidence to show that a large number is of greater therapeutic value than fewer gaps. It is possible that more gaps with the increased number of cooling vanes would result in a more uniform temperature of the points and consequently more uniform operation. Quantitative data on this are needed.

It is necessary to examine the following:

- (a) Cooling vanes—the metal, number and size.
- (b) Arcing tips—metal, size, accessibility for removal.
- (c) Knobs for adjustment—construction and insulation.
- (d) Method of adjustment.
- (e) Protection of operator:
 - (1) Protection of eyes from ultraviolet radiation of arc.
 - (2) Protection from shock and burns due to uncovered metal parts connected to the high voltage secondary.
- (f) Support for spark gaps.

5. *Condensers.*—The condensers used in diathermy machines are of two types: (1) the mica condenser, and (2) the Leyden jar. For purposes of convenience, the mica condenser is recommended. Leyden jar condensers having a glass dielectric would be easily broken. In some cases contact is made with the interior of the jar by using a salt solution which can spill and which will decrease by evaporation and will require refilling. On the other hand, a suitable mica condenser does not require any attention and can be enclosed within the machine for any length of time. For the condensers in general, information in regard to the following should be available:

- (a) Type, grade and dimensions of dielectric.
- (b) Breakdown voltage of dielectric.
- (c) Capacity of condensers.
- (d) Arrangement of condensers in circuit.
- (e) Mounting of condensers in the machine.
- (f) Connections of leads to condensers.

6. *Inductance in High Frequency Oscillatory Circuit.*—The inductance of the high frequency circuit placed between the condensers consists of a few turns of heavy wire. In most machines this coil is enclosed within the cabinet, but in others it is exposed. It is recommended that this coil be enclosed by a suitable cabinet in which there is no possibility of accidental contact. In an examination of the coil, the following should be examined:

- (a) Support of coil.
- (b) Connections:
 - (1) To condensers.
 - (2) To patient.
- (c) Value of inductance.
- (d) Size of wire.
- (e) Dimensions and coil, number of turns, and so on.

7. *Milliammeter.*—A good milliammeter is essential to a diathermy machine, since the diathermy dosage is adjusted by the milliammeter. For this reason it is necessary that the reading of the instrument should be

the true reading. In an examination of the milliammeter, attention should be directed to the following:

- (a) Accuracy.
- (b) Scales.
- (c) Type—thermocouple or hot wire.
- (d) Mounting and connections.
- (e) Fuses.

Milliammeters are recommended which will not burn out when short circuited.

8. *Leads to the Patient.*—The metallic conductors between the patient and the machine are subject to considerable rough usage and should be examined carefully. The plug connections between the machine and the leads to the patient should be covered. The leads should be examined for:

- (a) Length.
- (b) Insulation.
- (c) Flexibility.
- (d) Connections to machine and electrode.

9. *General Assembly of Apparatus.*—(a) Size of machine. Some machines are unnecessarily bulky. The arrangement of the apparatus should be compact with care to prevent contact of wires within the machine. It is an advantage to have a portable machine and it is much more convenient to move a smaller machine than a larger one.

(b) Assembly of apparatus. The different parts of the machine should be firmly fixed to a strong frame which can be easily removed from the cabinet. The parts should be readily available for inspection and removal.

(c) Adjustments. The sole adjustment should be that of the current through the patient. This is accomplished by (1) the voltage regulator as described for large steps in the voltage regulation, and by (2) the spark gap for a continuous variation between the larger steps of the voltage regulator. In one machine the gaps are fixed and the continuous variation made by adjusting the coupling between the main oscillating circuit and the circuit containing the patient, which is inductively coupled to the main oscillating circuit. The machines should be examined to exclude useless adjustments.

(d) Safety devices. The metallic parts connected to high voltage must not be exposed. Fuses to protect both the patient and the meter should be inserted at a suitable place in the circuit.

TESTS OF THE DIATHERMY MACHINE

1. *Frequency Test.*—The frequency of the machine can be determined with a wave meter. The frequency should be of such a value that no electrical stimulation occurs under maximum peak voltage of the operating conditions.

2. *Test of High Frequency Energy Output.*—A diathermy machine must have a sufficient high frequency power output to produce hyperthermia in the usual time of treatment. It is recommended that the machines be capable of delivering 250 watts of high frequency power, without any sensation of electrical stimulation and under any conditions of treatment, before being accepted by the Council on Physical Therapy.

3. *Test of Machines for Low Frequency Current Surges.*—Associated with the high frequency current, especially with wide gaps and high value of power output, there is sometimes a low frequency current which results in electrical stimulation of the neuromuscular

system. This has been shown² to be due to an unbalance in the secondary of the low frequency transformer with respect to ground. Diathermy machines must be examined for this defect.

4. *Test of Machine for Operation.*—The machine should be operated at maximum capacity for a period of ten hours and carefully watched for any effects of overheating or sparking in any part.

5. *Efficiency of Machine.*—The ratio of high frequency power output to low frequency power input should be measured under all clinical conditions. At present it is not known what advantages or disadvantages would result from too high or too low an efficiency, but it would be inadvisable to recommend a machine with an extremely low efficiency. It is advisable, however, to sacrifice efficiency for the other requisites.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.
RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

ST. JOHN'S BREAD. THE TREE OF LIFE

The St. John's Baking Company, Minneapolis, submitted to the Committee on Foods a bread containing water, wheat flour, ground whole soy bean, ground Cyprus carob, milk powder, hydrogenated vegetable fat, honey, yeast, iodized salt, and malted barley flour called "St. John's Bread. The Tree of Life."

Discussion of Label and Advertising.—The label carries sketches of the "tree of life," the rising sun, the pyramids and sphinx and other Egyptian figures, and such statements as:

"St. John's Bread The tree of life The only bread made of starchless carob fruit and soy bean vegetable with cereal health bread sunshine within."

The entire label is apparently intended to mystify. The Cyprus carob fruit and soy bean ingredients are present in too small proportions to warrant the emphasis given them. There is no "health bread." An adequate diet is essential to health, but health depends on many other factors than those of nutrition. The manufacturer was informed of the misleading character of the entire label subsequent to which proof of a new label was provided which carries the statements:

"For diabetics and those afflicted with obesity Low starch content High quality balanced protein Recommended for faulty elimination Made of whole wheat flour, whole soybean flour, whole ground carob fruit, whole milk, vegetable fat, yeast, salt, and barley (diastase) malt flour No cane sugar, beet sugar, molasses, glucose or animal fat used in our formula."

A leaflet furnished with the label proof states:

"Especially recommended for diabetes, faulty elimination and obesity Low starch content A balanced ratio of digestible carbohydrates A well balanced food It supplies the elements for energy and growth Why it is healthful—St. John's Bread has a low starch content but a balanced ratio of digestible carbohydrates high quality protein it is especially enjoyable and beneficial to those afflicted with diabetes or obesity Is highly laxative and corrective Many physicians are prescribing it for their patients The Cyprus carob fruit is included for its high sugar content We do not add cane sugar, beet sugar, glucose, malt or molasses."

The composition of this bread does not warrant its recommendation for "diabetics and those afflicted with obesity," which erroneously implies that the food may be taken in unrestricted quantities, is harmless and has remedial action in diabetes, and that the bread has use in the treatment of obesity. Such "medical advertising" leads to self-medication and possible disaster to the sick. This bread has no more value in the treatment of obesity than ordinary bread. The statement "low starch content" implies the bread is low in carbohydrates,

which is incorrect. The bread will not correct all forms of "faulty elimination," as stated or implied. It may be of value for aiding in prevention of constipation due to insufficient bulk. Claim that the bread contains "diastase" is misleading. The diastase is probably destroyed in the baking. Its presence in bread or foods has no significant value as implied for digestion of starch in foods in that saliva admixed with foods in eating is many times more potent in the digestion of starch than is any diastase in this bread. The claim that the product contains no "added cane sugar, beet sugar, molasses, glucose or animal fat" has no significance, connotes that the bread does not naturally contain these sugars and is low in carbohydrates, and is misleading. It is insinuated that "animal fat" is harmful or objectionable. What is meant by "a balanced ratio of digestible carbohydrates" is not known. It is not "a well balanced food," which implies that the bread is a complete food. Not all "The elements for growth" are present, as alleged. That "many physicians are prescribing it" is an unwarranted, vague claim and assumption.

The entire advertising, the old label, new label proof and a leaflet, are an attempt to convey unwarranted special properties to the bread adapting it for use by the diabetic and obese. It resorts to the commonplace artifice of high-sounding, vague terms to overwhelm the reader, to insidious deception by indirection and partial truths. The advertising is grossly misleading.

The company was informed of the Committee's criticisms and comments but has ignored requests for revised corrected labels and advertising. This bread will therefore not be listed among the Committee's accepted foods.

NOT ACCEPTABLE

AMERICAN BEAUTY ELBO-RONI READY CUT MACARONI, SALAD-RONI SPECIAL MACARONI, SHELL-RONI MACARONI SHELLS, HIGH GRADE MACARONI, HIGH GRADE SPAGHETTI AND EGG NOODLES.

The American Beauty Macaroni Company, Denver, Kansas City, Mo., and St. Louis, submitted to the Committee on Foods various forms of macaroni and spaghetti products containing durum semolina and salt, called American Beauty Macaroni, Spaghetti, Elbo-Roni Ready Cut Macaroni, Salad-Roni Special Macaroni and Shell-Roni Macaroni Shells; and an egg noodles containing durum semolina and dried or liquid egg yolk, called American Beauty Brand Egg Noodles.

Discussion of Labels and Advertising.—The labels carry the statements:

"For health and strength eat American Beauty Macaroni Fresh eggs are used American Beauty Macaroni products are manufactured at Denver, Colorado, and Kansas City, Mo., in the cleanest and healthiest climate in the United States. The rarefied atmosphere and pure mountain water insure ideal sanitary conditions."

No single food insures or provides health as implied. A complete diet is necessary for health, but health depends on many other factors than those of nutrition. "Fresh eggs" are not used, but dried or frozen liquid egg yolk is the egg ingredient. Neither the climate of Denver and Kansas City nor the atmosphere and mountain water have anything to do with the "ideal sanitary conditions" of manufacture of these products.

The advertising includes the statements:

"They are real health foods—more satisfying, and contain more food value than meat, potatoes, milk or eggs American Beauty Products are nature's nearly perfect food for all ages. . . . They bring you all the elements necessary to build bone and muscle and to promote health and growth from infancy to old age They contain mineral salts for digestion Contain all the vital elements they (children) need More nourishing than meat Contain ingredients that furnish everything needed for building and sustaining a strong, vigorous and healthy body Wholesome, flavorful American Beauty Macaroni Products are ideal health foods for rapid-growing, hard playing youngsters They contain an abundance of health-building elements."

These macaroni products are no more "healthful" than are other ordinary foods. The comparisons of food value with "meat, potatoes, eggs or milk" are misinformative and misleading. These products are far from being "nature's nearly perfect food for all ages." Macaroni products are deficient in many essential nutritional elements. These products do not

contain "all the elements necessary to build bone and muscle" but are deficient in a considerable number. Macaroni is not an "ideal health food."

The manufacturer was advised of the Committee's report but has ignored its recommendations and criticisms for correcting the advertising and labels. These products will therefore not be listed among the Committee's accepted foods.

NOT ACCEPTABLE

LITH-A-LIMES

The Cloverdale Spring Company, Baltimore, submitted to the Committee on Foods a bottled carbonated beverage called "Lith-A-Limes," containing Cloverdale Mineral Water, sucrose, citric acid, and essential oils of citrus fruits.

Discussion of Name.—The name suggests the presence of lithia and of lime juice, which materials are not ingredients. The syllable "lith" recalls former nostrum advertising of lithia waters, which fortunately have largely disappeared from the market. A product containing lime juice has nutritional values not contained in this beverage. The name "Lith-A-Limes" is inappropriate for the product and is either directly or indirectly misinformative and misleading.

The company was advised of the criticisms of the Committee but is unwilling to change the name for business reasons. This product will therefore not be listed among the Committee's accepted foods.

REPORTS OF THE COMMITTEE

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

CLAPP'S ORIGINAL PUREE OF PEAS

(ADDED SALT AND SUGAR)

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Strained cooked peas; a small quantity of salt and sugar is added. The method of preparation is efficient for retention in high degree of the natural vitamins and minerals.

Manufacture.—Canned peas are strained in an atmosphere of water vapor and subsequently treated as described for Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

The purchased canned peas are prepared from washed, graded peas by methods described for Clapp's Original Puree of Carrots (THE JOURNAL, June 24, 1933, p. 2011). Salt and sugar are added.

Analysis (submitted by manufacturer).—

	per cent
Moisture	85.0
Total solids	15.0
Ash	1.1
Salt (NaCl)	0.7
Fat (ether extract)	0.4
Protein (N \times 6.25)	3.8
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)...	8.9

Calories.—0.5 per gram; 14 per ounce.

Vitamins and Claims of Manufacturer.—See Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

MARY LOU SELF-RISING FLOUR

(BLEACHED)

Manufacturer.—The Robinson Milling Company, Salina, Kan.

Description.—Self-rising flour prepared from bleached "straight" hard winter wheat flour, calcium acid phosphate, salt and baking soda.

Manufacture.—The ingredients are mixed in a batch mixer and automatically packed.

Claims of Manufacturer.—For cake, biscuit and pastry baking in the home.

LARSEN'S CELERY (STRAINED-UNSEASONED)

Manufacturer.—The Larsen Company, Green Bay, Wis.

Description.—Sieved celery prepared by efficient methods for retention in high degree of the natural mineral and vitamin values of the raw celery. No added salt or sugar.

Manufacture.—Freshly harvested celery is trimmed of all leaves, butts and green tops, sorted, inspected for removal of foreign material, thoroughly washed, steamed until soft enough for sieving, strained as described for tomatoes (THE JOURNAL, July 1, 1933, p. 35), admixed with a small quantity of water to produce the desired consistency, and heated in a closed vessel at 82 C. It is automatically filled into washed cans, which are sealed and processed for sixty minutes at 116 C.

Analysis (submitted by manufacturer).—

	per cent
Moisture	94.1
Total solids	5.9
Ash	1.0
Salt (NaCl)	0.2
Fat (ether extract)	0.2
Protein (N \times 6.25)	1.0
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)...	2.9

Calories.—0.2 per gram; 6 per ounce.

Vitamins and Claims of Manufacturer.—See Larsen's Strained Tomatoes Unseasoned—Ready for Use (THE JOURNAL, July 1, 1933, p. 35).

BOB WHITE SELF-RISING FLOUR (BLEACHED)

Manufacturer.—Bob White Flour Mills, Kingfisher, Okla.

Description.—Self-rising flour containing hard wheat patent flour (bleached), salt, calcium acid phosphate and baking soda.

Manufacture.—The ingredients are mixed in definite proportions in a batch mixer and automatically packed in cotton bags.

Claims of Manufacturer.—For biscuit, pastry and cake baking.

TUPPENCE CHOCOLATE PEANUT CANDY

Manufacturer.—Curtiss Candy Company, Chicago.

Description.—Sweet chocolate coated confection bar containing peanuts, sucrose, glucose, syrup, cacao butter and salt.

Manufacture.—Essentially the same as described for Buy Jiminy (a peanut bar) (THE JOURNAL, July 15, 1933, p. 211) with the exception that the bars are passed through chocolate enrobing machines ("enrobers").

Analysis (submitted by manufacturer).—

	per cent
Moisture	1.5
Ash	1.3
Fat (acid hydrolysis method)	31.3
Protein (N \times 6.25)	12.3
Reducing sugars as dextrose	8.1
Sucrose (copper reduction method)	31.0
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)...	52.8

Calories.—5.4 per gram; 153 per ounce.

GERBER'S STRAINED CARROTS

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Strained cooked carrots retaining in high degree the natural vitamin and mineral values; the coarser fibrous material is removed. No added seasoning or sugar.

Manufacture.—The carrots grown from selected seed and under company supervision are harvested at the proper state of maturity, promptly washed, peeled, inspected, sieved, canned and processed as described for Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

Analysis (submitted by manufacturer).—

	per cent
Moisture	91.7
Total solids	8.3
Ash	0.4
Fat (ether extract)	0.2
Protein (N \times 6.25)	1.0
Reducing sugars before inversion (as invert)	4.7
Sucrose (copper reduction method)	0.2
Starch (acid hydrolysis method)	0.3
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)...	6.1

Calories.—0.3 per gram; 9 per ounce.

Vitamins, Minerals and Claims of Manufacturer.—See Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 2, 1933

PHYSICIANS AND THE NRA—AN OFFICIAL STATEMENT

The influence of the National Industrial Recovery Act on prosperity depends on the intelligent cooperation of all effective social and economic forces, under organized leadership. The medical profession is eager to do its part. Exactly what that part is the National Industrial Recovery Act does not say. The act limits its provisions to trades and industries, and the practice of medicine is neither a trade nor an industry.

Outside of the trades and industries, cooperation in the movement to restore prosperity is voluntary, a patriotic endeavor to follow the President's lead. The position of the medical profession as an organized group is, however, somewhat anomalous. Among the trades and industries, the present movement is designed to increase the labor costs of manufacture and distribution. The fact that this will result in increased prices for the products manufactured and distributed is not regarded as a drawback. The increase in pay-rolls and the corresponding increase in purchasing power will, it is hoped, revive prosperity and more than offset the increase in prices of merchandise. These conditions hardly apply, however, to prices and demand for the services of physicians and hospitals. Certainly it is not the wish of any one that the medical profession should do anything to increase the demand for medical and hospital services and to increase the cost of illness.

In the hope of obtaining definite instructions as to medical cooperation, the American Medical Association sent to the President and to the National Recovery Administration, August 7, letters describing the organization of the profession and giving an insight into its present status and activities, including the activities and status of hospitals, dispensaries, clinics and laboratories. The letters expressed the hope that "interpretations of the National Recovery Act, as it may apply to medical organizations and to the practice of medicine, will be furnished to the American Medical Association in order that it may do anything within its power to uphold the hands of the government." Under date

of August 25, a reply to the letter addressed to the National Recovery Administration was received from Mr. Lester G. Wilson, Executive Secretary, Blue Eagle Division. This letter is printed under Association News in this issue.

The suggestions with respect to the working hours and the wages of the employees in the publication department of the American Medical Association had been carried out long before the receipt of Mr. Wilson's letter, pending the formulation of a code for the periodical industry.

Concerning hospitals, Mr. Wilson says: "Hospitals which are distinctly not operated for profit cannot be forced to apply for the Blue Eagle." The suggestion of the exercise of force to compel any hospital to apply for the Blue Eagle is an unfortunate locution. Such hospitals as are within the provisions of the National Industrial Recovery Act, if there are any, may be depended on to cooperate, not only willingly but gladly, without any show of force on the part of the National Recovery Administration. Hospitals that are not within the letter or even the spirit of the act can be depended on to do likewise, as far as that is possible without increasing the cost of their services beyond the ability of patients to pay and beyond the ability of charity to make provision for needy cases.

Mr. Donald R. Richberg, general counsel of the National Recovery Administration, ruled, August 17, before the date of Mr. Wilson's letter, that "hospitals, not engaged in carrying on a trade or industry, do not come within the purview of the National Industrial Recovery Act, so as to come under the ordinary requirement of a code of fair competition." Hospitals not carrying on trades or industries should, under this ruling, as volunteers and not under any threatened compulsion, conform to the President's wishes as expressed in the President's reemployment agreement, if they find they can properly do so. Hospitals that cannot, may well consider the advisability of enrolling under the Consumer's Blue Eagle. In either event, the hospital that enrolls should clearly recognize that enrolment means the duty to support and patronize establishments which have signed the President's reemployment agreement and are listed as members of the National Recovery Administration, which may involve difficulties and increased cost in hospital administration.

Mr. Wilson's statement concerning employees in physicians' offices does not clarify the situation at all. "If possible [he says], such employees should be placed upon a basis complying with maximum hour and minimum wage provisions of the President's Agreement; but if that is not possible . . . we believe that the physicians in question should make application for Stays under Paragraph (14) of the President's Agreement." Mr. Wilson, speaking for the National Recovery Administration, expresses no opinion con-

cerning the legal obligation on the part of a physician to subject himself to a code, and yet the physician who signs the President's reemployment agreement, as Mr. Wilson suggests that he should do, obligates himself to cooperate to the fullest extent in having a code of fair competition submitted "by his industry." No official opinion has ever been expressed, so far as it has been possible to discover, holding that the employment by a physician of one or more nonprofessional helpers brings him within the purview of the act. In other words, no one has yet officially declared that, by employing help to enable him to carry on his practice, a physician changes his profession into a trade or industry and brings himself within the rules governing trades and industries. It is not likely that any such claim will be made, not only because it is unreasonable but because it would be inconsistent with rulings already made with respect to other professions. It has never been claimed that, because a trade or industry employs one or more professional persons, that trade or industry thereby is converted into a profession. By parity of reasoning it would be illogical to claim that the employment by a professional person or organization of nonprofessional persons places the professional activities of the employer on a trade or industrial basis.

Nothing that has been said, however, should dissuade any one from signing the President's reemployment agreement if he feels that he can properly do so within the spirit of the act and can live up to its provisions. Neither should it dissuade any one from signing the pledge necessary to obtain a Consumer's Blue Eagle, under similar circumstances. Certainly it is the duty of every one to uphold the President's hands to the upmost. The only difficulty now is determining how best to effect such cooperation.

BACTERIOPHAGE WATER PURIFICATION

Rivers, lakes and other contaminated surface waters almost invariably contain one or more transmissible lysins for the colon bacillus and often contain readily detectable amounts of lysins for numerous other bacterial species. Several bacteriologists have suggested that such widely distributed "bacteriophages" must play a significant part in natural water purification. If so, similar specific sterilizations should be of value in the prevention of water-borne infectious diseases. The vibriocidal properties of certain Indian rivers, for example, and the bactericidal property of at least one European stream have been assumed to be specific bacteriophage phenomena. The addition of laboratory-grown cholera bacteriophage to municipal water supplies has been tried in India, and the subsequent decrease in cholera epidemics has been cited as proof of prophylactic effects. A dozen enthusiasts have suggested that bacteriophages should be added to swimming pools and used in the routine disposal of sewage. Bacteriophage has even been suggested as a possible

food preservative, as a plant spray, and as a means of conserving or enhancing the fertility of the soil.

Many bacteriologists, however, have criticized these suggestions. They point out that the lytic agent is not a self propagating vital unit but that it more nearly resembles a colloidal enzyme or hormone. Multiplication or apparent multiplication takes place only in the presence of rapidly proliferating homologous bacterial strains. If for any reason bacterial proliferation is inhibited, little or no increase takes place in the accompanying "phage titer." This in itself would seem to rule out the possibility of any appreciable quasimultiplication of bacteriophage under the usual low temperature of surface waters, at least for bacteriophages of the gastro-intestinal group. It is further emphasized that, even under most favorable temperature and nutritional test tube conditions, bacteriolysis does not take place until the bacteriophage concentration of the culture medium has been raised to approximately a billion "lytic units" per cubic centimeter.¹ A mere dilution of the culture medium might thus delay or even prevent bacteriophage lysis. Moreover, the lytic factor is known to be adsorbed on proteins, nonprotein colloids, kaolin, clay and other suspended particles and thus rendered temporarily inactive. Under conditions of volumetrically delayed or colloiddally inhibited lysis, the exposed micro-organisms may change to bacteriophage-resistant strains, which cannot be lysed even under most favorable noncolloidal test tube conditions.

Throughout this whole discussion, however, there has been an almost unbelievable lack of good experimental evidence. Both proponents and opponents of the environmental bacteriophage sterilization theory have resorted to little more than dialectic evidence. The currently reported crucial tests by Prof. Paul J. Beard² of the sanitary engineering department at Stanford University, therefore, are a timely service to the clinical profession. They represent the type of work that should have been undertaken a decade ago, before the speculative pros and cons had been given such wide publicity. Briefly summarized, Professor Beard studied the action of numerous anticolon and antistaphylococcus bacteriophages on known bacteriophage-susceptible strains, under volumetric, temperature, nutritional, colloidal and noncolloidal conditions closely simulating those of natural water supplies and routine methods of sedimentation and storage, as well as the more complex conditions of the septic tank. Sedimentation plants and sludge processing chambers were constructed in miniature and usually in duplicate, so that adequately controlled tests could be made both in the presence and in the absence of bacteriophage. In none of these tests did the bacteriophage show the least effect on the corresponding bacteria. There was no significant difference in the number of specific micro-organisms

1. Northrop, J. H., and Krueger, A. P.: *J. Gen. Physiol.* 15: 329 (Jan.) 1932.

2. Beard, P. J.: *J. Infect. Dis.* 52: 420 (May-June) 1933.

developing or remaining in any fluid or chamber to which bacteriophage was added, when compared with control counts under bacteriophage-free conditions. Moreover, none of the exposed bacteria became phage resistant. In the presence of clay or of suspended particles of organic matter, fully 99 per cent of the bacteriophage was adsorbed onto the particles and could be recovered apparently unchanged by proper methods. "It is believed," Professor Beard concludes, "that the experiments simulate adequately the natural conditions under which bacteriophage must function if it is to participate significantly in stream or sewage purification. From these data it does not seem possible that bacteriophage is likely to participate significantly in the reduction of bacterial numbers in polluted water or in sewage."

Current Comment

EPIDEMIC ENCEPHALITIS IN ST. LOUIS

Newspapers record the occurrence of epidemic encephalitis centering about St. Louis, with a total at the time we go to press of some 283 cases and forty-one deaths. Information indicates that the encephalitis differs from the disease as previously reported in that it affects people of all ages, though older adults predominate. The onset is typical, with the usual headache, nausea, fever, stiffness of the neck and mild pharyngitis, and also with a fine tremor of the hands and tongue. Coma and convulsions are reported to be less common than lethargy. In a few cases there is hyperexcitation instead of drowsiness. As in other cases of encephalitis, disorientation, mental confusion and aphasia are frequent symptoms. An unusual observation, however, is the almost complete absence of ptosis of the eyelids and double vision. The spinal fluid cell count reveals a definite increase in lymphocytes, and counts of from 300 to 500 more cells are being reported; but the average is approximately 100. Examination of the blood reveals a mild leukocytosis, with depression in lymphocytes. In the mild cases the symptoms disappear within one or two weeks, and there is absence of sequelae; but of course the time is too short to say what the ultimate outcome in these cases will be. Postmortem examination made in twelve instances showed lesions similar to those in typical epidemic (lethargic) encephalitis, except that more involvement appeared in the cortex than in the basal ganglions of the brain. A special report to *THE JOURNAL* says that the cases are grouped but that it has been impossible to trace contact between those affected. In only one instance were two persons in one family affected. The United States Public Health Service has concentrated its efforts on studying the condition. Physicians realize that thus far scientific medicine has not developed a specific method of treatment or prevention. Among methods already employed in such cases have been the injection of nonspecific proteins in the form of typhoid vaccine, infection with malaria, fever produced by various means, and the use of convalescent

serums and of allegedly specific serums; all, however, without any definite evidence of specific value. There seems to be no reason to believe that the condition will spread so as to become nationwide; nevertheless, the possibility exists and physicians everywhere should be alert for the onset of the earliest symptoms of this disorder.

THE PRODUCTION OF VITAMIN D BY IRRADIATION THROUGH THE SKIN

The therapeutic effects of exposure to sunlight as well as to irradiation by means of ultraviolet rays has been definitely established in the treatment and likewise the prevention of rickets. There seems to be no doubt that the ultraviolet rays are of value in protecting against osteomalacia in adults. Direct or indirect ultraviolet irradiation seems to be of decided benefit for nursing women¹ and of value during the later months of pregnancy but apparently has not yet been demonstrated to be a necessity for adults in general. Metabolic studies carried out for long periods and at different seasons of the year, on individuals leading normal lives, would be of value. To the scientist it becomes imperative to attempt to ascertain how exposure of the skin to the various modes of suggested irradiation can be effective. It will not suffice to claim, without definite proofs, that somehow radiations of suitable wavelengths activate ergosterol somewhere in the epidermal structures. Evidence of a more specific function is desirable. This now seems to be available through studies such as Lucas² has conducted at the Lister Institute in London. He suggested some time ago that enough ultraviolet rays of sufficiently short wavelength to activate ergosterol might penetrate the epidermis and reach the ergosterol contained in the capillaries lying just below it. In Lucas's most recent contribution he has shown that the amount of light transmitted in this way is actually sufficient to produce vitamin D in the manner suggested. The tests were made directly through the skin of suitable animals. A chemical connection between external irradiation and the circulating medium of the capillaries is thus experimentally established.

SYMPTOM-FREE ANTHRAX

Russian Cossacks usually kill all seriously diseased cattle and eat the diseased flesh in a partially cooked or semi-raw condition. The appearance of a case of malignant pustule in one Cossack group, therefore, led Sinai,¹ of the bacteriologic institute at Alma Ata, Kazakstan, to make bacteriologic and serologic examinations of all members of this group. A month previously, about thirty members of the group had eaten the partially cooked flesh of a dying calf. Examination of blood stains at the place of slaughter showed that the calf was presumably dying of anthrax infection. In spite of the fact that only one member of the group showed recognizable symptoms, serologic reactions revealed the presence of "anthrax antigen" in the blood

1. Lucas, N. S.: *Biochem. J.* 25: 57, 1931; 27: 132, 1933.
2. Sinai, G. J.: *Ztschr. f. Immunitätsforsch.* 79: 199 (June) 1933.

of fifteen members of the group, or in about 40 per cent of those known to have eaten the diseased veal. A parallel study of 269 serums from other local Cossack groups gave uniformly negative results. A reexamination of a few of the fifteen antigen carriers at the end of two months also gave negative results. Sinai concludes from these data that "symptom-free anthrax" is possible in man and may be much more common than is currently assumed. Whether or not the circulating "anthrax antigen" in the fifteen individuals was present in a viable or nonviable condition was not determined by the rabbit precipitin tests.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., Chicago daylight saving time, which is one hour faster than central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

- September 5. What About Vitamins?
- September 7. Ticks That Don't Tell Time.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

- September 9. Something for Nothing.

PHYSICIANS AND THE NATIONAL RECOVERY ADMINISTRATION

In response to a request by the Board of Trustees, the Secretary and General Manager of the American Medical Association filed with the National Recovery Administration a statement relative to the work of the American Medical Association and also several questions as to the place of physicians under the National Recovery Act. The following reply has been received:

NATIONAL RECOVERY ADMINISTRATION
Washington, D. C., Aug. 25, 1933

In Reply Refer to _____

Mr. Olin West, M.D.
Secretary and General Manager
American Medical Association
Chicago, Illinois

Re: *President's Agreement*

Dear Sir:

We deeply regret the delay in answering your letter of August 7th:

I shall first give you certain specific information concerning various paragraphs of your letter and shall then refer the letter to Deputy Administrator Whiteside of this office, who is in charge of formulation of permanent codes applying to employees in connection with professional occupations.

If your office employees and the employees of your printing plant are working not over forty hours per week and are receiving more than the minimum wage as provided in the President's Agreement, you are complying with the Recovery Program, and are entitled to display the Blue Eagle.

This permission, however, does not extend to the constituent state and territorial medical associations, which should make application for the Blue Eagle in their own behalf.

On page 4 you mention the matter of employees in physicians' offices, including persons whose sole duty it is to answer telephone calls. If possible, such employees should be placed upon a basis complying with maximum hour and minimum wage provisions of the President's Agreement; but if that is not possible for reasons as stated in your letter, we believe that the physicians in question should make application for Stays under paragraph 14 of the President's Agreement.

As you know, interns, nurses, hospital technicians and research technicians are included among professional persons within the meaning of paragraph 4 of the President's Agreement.

Hospitals which are distinctly not operated for profit cannot be forced to apply for the Blue Eagle.

However, we ask them to do so if they can, on account of the clerical and other service employees that they have on their payrolls, especially in view of the fact that they would be adding to the material support of the President's Agreement and would get in return public support accorded all institutions that are able to apply for the Blue Eagle.

LESTER G. WILSON.

Executive Secretary, Blue Eagle
Division of the N. R. A.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Society News.—Dr. Charles F. Lewis, Birmingham, addressed the Walker County Medical Society, Jasper, at its July meeting, on venereal disease.—Dr. Horton R. Casparis, Nashville, lectured on pediatrics before the Madison County Medical Society, Huntsville, July 11.

Graduate Courses in Obstetrics.—Dr. James R. McCord, professor of obstetrics and gynecology, Emory University School of Medicine, Atlanta, will open a series of courses in obstetrics in Alabama, September 25. The courses will be held during the fall and winter months in various centers throughout the state not yet announced. The lectures are under the auspices of the Medical Association of the State of Alabama and are made available through the Bureau of Child Hygiene, Washington, D. C.

ARKANSAS

Personal.—A member of the staff of the U. S. Public Health Service, to be paid by local funds, will conduct a health survey in Pulaski County, to plan coordination of the health facilities of the county, newspapers announced.—Dr. Lorenzo T. Evans, Batesville, has been appointed a member of the State Medical Board of the Arkansas Medical Society, succeeding Dr. Samuel J. Allbright, Searcy.—Dr. Walter H. Bruce, for five years in charge of the health unit at Morrilton, has been appointed health officer for Pine Bluff and Jefferson County.

Clinical Conference.—Staffs of the Leo N. Levi Memorial Hospital and the Charles Steinberg Clinic, Hot Springs National Park, will hold their third clinical conference, October 5, with Dr. Ralph A. Kinsella, St. Louis, as guest speaker. Major Chauncey Elmo Dovell of the Army and Navy General Hospital, Hot Springs National Park, will also be a guest at the conference. The program has been arranged to be of special interest to the general practitioner and will consist of lectures, demonstrations and clinics on medical and surgical subjects. Cases and clinical reports will also be presented. An informal dinner at the Arlington Hotel will close the conference.

CONNECTICUT

Dr. Burr Made Professor of Anatomy.—Harold Saxton Burr, Ph.D., professor of anatomy since 1929, Yale University School of Medicine, New Haven, has been appointed E. K. Hunt professor of anatomy and head of the section of neuro-anatomy. The Hunt professorship was held by Dr. Harry Burr Ferris prior to his recent retirement as professor emeritus. Dr. George M. Smith has been made research associate in anatomy with the rank of associate professor. Changes in the department of anatomy already noted in THE JOURNAL are the appointment of Edgar Allen, Ph.D., formerly dean of the University of Missouri School of Medicine, St. Louis, as professor of anatomy and head of the department succeeding Dr. Ferris, and the promotion of Dr. Harry M. Zimmerman to associate professor.

DISTRICT OF COLUMBIA

New Radiologic Department.—The radiologic department of Garfield Memorial Hospital has been enlarged by the establishment of the Helen L. and Mary E. Warwick Clinic through a bequest of the late Randolph T. Warwick. In his will Mr. Warwick provided for the establishment of an institute

"for the care and treatment of women afflicted with cancer," under the trusteeship of the Washington Home for Foundlings, and an arrangement was reached whereby the Warwick Clinic has been installed in a new building on the grounds of the Garfield Hospital. The new laboratories are equipped with modern apparatus, and two 200,000 volt machines provide for rapid and efficient treatment of patients. Dr. Edwin A. Merritt is in charge of the radiologic laboratory and Dr. Janvier W. Lindsay of the pathologic laboratory. Admiral Cary T. Grayson, retired, will be in charge of the Warwick Clinic.

FLORIDA

Personal.—Dr. Eustis R. Marshburn, Marianna, has been appointed medical officer of the Western Florida district; Dr. Thomas S. Kennedy, Milton, has been designated sanitary officer of the same district.—Dr. Leroy H. Oetjen, Leesburg, was elected president of the Central Florida Medical Society at its summer meeting. The next meeting of the society will be in Gainesville in October.—Dr. Horace A. Day, Orlando, has been appointed a member of the state board of medical examiners, succeeding Dr. Nicholas A. Baltzell, Marianna.

ILLINOIS

Society News.—Dr. William W. Eichelberger, Alton, addressed the Madison County Medical Society, August 4, on "Psychiatry and the General Practitioner."

Chicago

Police Protection on Request for Physicians.—Members of the Chicago Medical Society will be granted police protection on request when making calls on patients. Appreciation among members of the society since the murder of Dr. Bernard F. Garnitz last winter prompted Dr. Austin A. Hayden, president of the society, to request of the police commissioner an escort for any who feel it may be necessary, especially when called by persons unknown to them.

Illness and the Extension of Railroad Tickets.—Railroad officials request that physicians use only the official blanks required by the Interstate Commerce Commission when certifying to illness of persons who wish tickets extended. Many cases are brought to the attention of railroad officials of visitors to the Century of Progress Exposition who ask for extension of the time limits of their tickets or stopovers because of illness or quarantine. In most cases the physicians write a note, which cannot be accepted because the regulations of the commission require a special blank. Physicians are asked to advise their patients that railroads will furnish the official blank on application.

School Observes Fiftieth Anniversary.—The fiftieth anniversary of the first graduating class (1883) of the University of Illinois College of Medicine was celebrated with a banquet, recently, with 437 alumni present. Members of the first class who attended are Drs. Morris R. Weidner, Sr., Dolton; Halsey E. Lovejoy, Rocky Ford, Colo., and Elihu N. Elliott, Chicago. Dr. David J. Davis, dean of the college of medicine, presented each with a copy of the original picture of their class. Speakers included Drs. Davis, Vandy F. Masilko, president of the alumni association, and Mr. Bruce Balding, president of the fourth class. The history of the college, particularly the first twenty-five years, was reviewed by Mr. William H. Browne, formerly secretary of the college. Dr. Weidner was installed as president of the Alumni Association for the coming year.

IOWA

Society News.—Dr. Edward H. Skinner, Kansas City, Mo., will address the Linn County Medical Society at Cedar Rapids, September 14, on "Critical Survey of Fractures and Treatment of the Ankle, Wrist and Elbow."—The Black Hawk County Medical Society heard Dr. Albert M. Snell, Rochester, Minn., speak on "Etiology and Clinical Course of Cirrhosis," Cedar Heights, July 18.—At a meeting of the Bremer County Medical Society in Waverly, July 7, Drs. John H. Peck and Daniel J. Glomset, Des Moines, spoke on "Recognition of Adult Tuberculosis" and "Pathology of Rheumatic Disease," respectively. A chest clinic was conducted at an afternoon session.—Dr. Henry E. Kleinberg, Des Moines, addressed the Dallas-Guthrie Medical Society at Woodward, July 20, on "Vaginal Bleeding in the New-Born Infant."—The Davis County Medical Society was addressed in Bloomfield, July 20, among others, by Dr. James C. Donahue, Centerville, on influenza.—Dr. Conrad R. Harken, Osceola, discussed fractures of the jaw before the Decatur County Medical Society, Decatur, June 23.—At a meeting of the Jefferson County Medical Society, July 7, Dr. Clarke W. Mangun, Mount Pleasant,

spoke on "Mechanisms of Mental Disorders."—Dr. Moses Barron, Minneapolis, addressed the First Councilor District Medical Society in Waverly, July 27, on nephritis.

MASSACHUSETTS

Hospital Art Exhibit.—More than 100 art compositions were displayed at the Massachusetts General Hospital recently, all the work of persons connected with the institution, including trustees, administrative staff, clinical staff, residents, interns, nurses, social workers, secretaries and technicians. The exhibit included oils, water-colors, etchings and clay modeling. Tentative plans have been made for a crafts exhibit later.

Dr. Minot Receives Moxon Medal.—Dr. George R. Minot, professor of medicine, Harvard University Medical School, Boston, has been awarded the Moxon gold medal of the Royal College of Physicians of England, newspapers report. Dr. Minot is well known for pioneer work on the liver treatment for pernicious anemia. In recognition of this he shared the Cameron Prize of the University of Edinburgh in 1930 with Dr. William P. Murphy. With Dr. George H. Whipple, Rochester, N. Y., he received the *Popular Science* prize of \$10,000 in 1931.

MICHIGAN

Another Microscope Stolen.—Dr. Alexander C. Rinkenberger, Benton Harbor, reports that a Spencer triple objective microscope, one eye-piece, was stolen from his office about August 8. Recently several microscopes have been reported stolen in Michigan.

State Medical Meeting at Grand Rapids, September 11-14.—The one hundred and thirteenth annual meeting of the Michigan State Medical Society will be held at Grand Rapids, September 11-14, with sessions in the Civic Auditorium, and under the presidency of Dr. James Milton Robb, Detroit. The Kent County Medical Society will act as host. Guest speakers will be:

Dr. Edward H. Cary, Dallas, Texas.
Rev. Alphonse M. Schwitalla, dean, St. Louis University School of Medicine, St. Louis.
Dr. Willis C. Campbell, Memphis, End-Results of Arthroplasty of the Hip.
Dr. Herman L. Kretschmer, Chicago, Changing Trends in the Treatment of Prostatic Obstruction.
Dr. Thomas E. Jones, Cleveland, Carcinoma of the Breast.
Dr. Wilber E. P., ... hritis and Their Treatment.
Dr. William L., ... Management of Glaucoma.
Dr. Wingate T., ... Functions of the Gastro-Intestinal Tract.
Dr. Everett D. Plass, Iowa City, An Analysis of Over 100,000 Births in Iowa with Particular Reference to the Relationship Between Type of Delivery and Stillbirth.

Michigan physicians who will also participate in the program include the following:

Clark F. Lemley, Detroit, Pulmonary Complications Following Anesthesia.
Roy D. McClure, Detroit, Thyroid Surgery in Southern Michigan as Affected by the Generalized Use of Iodized Salt.
Frederick A. Collier and Eugene B. Potter, Ann Arbor, Treatment of Peritonitis Associated with Appendicitis.
Perry V. Wagley, Pontiac, Resocialization Following Modern Therapeutic Measures for the Treatment of Paralytic Dementia.
Elmer L. Eggleston, Battle Creek, Functional Disturbances of the Colon.
Frank N. Wilson, Ann Arbor, Subacute Bacterial Endocarditis.
Lester E. Bauer, Detroit, Treatment of Primary Dysmenorrhea.
John E. Cooper, Battle Creek, Effect of Labor on the Kidneys of the Pregnant Woman.

MINNESOTA

Northern Medical Association Meeting at Willmar.—The Northern Minnesota Medical Association will hold its annual session at the Lakeland Hotel, Willmar, September 8-10. Sessions will also be held at the Elks Club and the auditorium of the state asylum. The following physicians will participate in the program:

William A. O'Brien, Minneapolis, Precancer Pathology.
J. Arthur Myers, Minneapolis, The Tuberculous Child.
Charles R. Drake, Minneapolis, Newer Laboratory Technic.
Charles N. Hensel, St. Paul, The Heart in Adolescence and Old Age.
MacNider Wetherby, Minneapolis, Arthritis.
Roscoe C. Webb, Minneapolis, Do's and Don'ts.
James M. Hayes, Minneapolis, Acute Conditions.
Thomas J. Kinsella, Oak Terrace, Surgical Tuberculosis.
Erling W. Hansen, Minneapolis, Common Eye Injuries.
Virgil S. Counsellor, Rochester, Bladder Surgery.
George E. Hudson, Minneapolis, Eclampsia: Prevention and Treatment.
Samuel B. Solhaug, Minneapolis, Obstetrical Analgesics.
Jalmar H. Simons, Minneapolis, Complications of the Second Stage.
William H. Hengstler, St. Paul, Headaches.

Dr. Naboth O. Pierce, Minneapolis, will exhibit a film on the nervous child, and a meeting on economics will be conducted by Drs. Edward A. Meyerding, St. Paul, and Herman M. Johnson, Dawson. Participating in a clinic on mental and

nervous diseases will be Drs. William H. Hengstler and Joel C. Hultkrans of St. Paul, and Hewitt B. Hannah, Minneapolis, and Lawrence R. Gowan, Duluth. Dr. William A. O'Brien, Minneapolis, will be the toastmaster at the banquet, Friday evening, and the address of the evening will be given by John W. Powell, D.D., of the University of Minnesota on "The Uses of Poetry." Short talks will be presented by Drs. Pierce, Berton J. Branton, Willmar, president of the association; Francis J. Savage, St. Paul, and Herman H. Jensen, Atwater. A golf tournament will be held Saturday and Sunday.

MISSOURI

Dr. McComas Honored.—Dr. Arthur Rochford McComas, Sturgeon, past president of the Missouri State Medical Association, was given a testimonial dinner during the recent seventy-sixth annual meeting of the association in Kansas City. Dr. McComas has served as chairman of the council of the association continuously since 1916, except for the year of his presidency in 1922, and recently completed forty-three years in the practice of medicine. Dr. Jabez N. Jackson, Kansas City, was toastmaster, and other speakers included Drs. Edward J. Goodwin, St. Louis; Warren L. Allee, Eldon; John F. Harrison, Mexico; Ross A. Woolsey, St. Louis; Joseph W. Love, Springfield; George Wilse Robinson, Sr., Kansas City; Frank G. Nifong, Columbia, and Mr. Edward Watson, Columbia, and Mr. Omar D. Gray and Mr. Don Carter, Sturgeon. Dr. McComas responded to the reminiscences of the speakers.

Cost of Venereal Disease to St. Louis.—The total annual cost of venereal disease to St. Louis and St. Louis County was estimated between \$2,071,000 and \$2,560,000, following a survey recently conducted by the Missouri Social Hygiene Association. Practically every phase of this cost was investigated, except the cost to industry in the loss of time and lessened efficiency of workers. The figures were derived from the exact cost of treating syphilis and gonorrhea, locomotor ataxia and dementia paralytica, and a percentage of the cost of treating twenty-seven other diseases some of which are attributable to syphilis and gonorrhea. Expenditures of city, state and other public institutions, private institutions, estimated incomes of physicians and costs of arrest and prosecution of prostitutes apprehended for medical examination were used in making the estimates, according to the *Journal of the Missouri Medical Association*. It was shown that in 1932 about 54,219 days of hospital care, 56 per cent of the total hospitalization in the two city hospitals, were for the care of patients suffering directly from venereal disease or other diseases complicated by it. The total annual expenditure by city institutions for treatment was set between \$400,069 and \$414,440. Twenty-five private hospitals reported an aggregate of 88,238 hospital days for venereal disease. While the survey did not attempt to estimate the amount paid to quacks and charlatans or include cost figures based on drug store sales, an analysis of the sources of previous treatment among 150 patients questioned at the municipal venereal disease clinic revealed that 23 per cent resorted to drug store treatment or self treatment, presumably with the aid of drug store remedies.

NEW YORK

First Case of Spotted Fever.—The first case of Rocky Mountain spotted fever ever officially reported to the New York State Department of Health was noted in *Health News*, July 17. A 4 year old child in East Hampton became ill suddenly, May 26, with typical symptoms. After sixteen days the child's temperature became normal and she has since recovered. Blood tests in the state laboratory confirmed the diagnosis.

New York City

Society News.—The New York and Brooklyn Regional Fracture Committee of the American College of Surgeons will conduct a course of ten clinic lecture demonstrations on treatment of fractures, October 16 to 21. Clinics will be held at the following hospitals: Presbyterian, Harlem, Beekman Street, Lincoln, Bellevue, Long Island College and Hospital for Ruptured and Crippled. Dr. Fenwick Beekman is in charge of the course, for which a fee of \$25 will be charged.

Personal.—Dr. Rufus I. Cole, director of research, Rockefeller Institute Hospital, received in absentia the honorary degree of doctor of science from the National University of Ireland, Dublin, during the recent annual meeting of the British Medical Association. Dr. Sigismund S. Goldwater, hospital consultant, has been appointed consulting hospital expert to collaborate with Russian architects, engineers and clinicians in the planning of hospitals in Leningrad and elsewhere in the Soviet Union. Dr. Lewis J. Friedman has been assigned as director of the roentgen-ray department of Bellevue Hospital.

Typhoid Traced to Shell Fish.—Nine cases of typhoid that occurred recently in Brooklyn were traced to clams and mussels dug surreptitiously in a sewage-polluted area. The first victim was a member of a party of five who dug the shell fish and ate some of them on the beach. Several other cases developed in persons who ate the infected food at home and additional ones through close contact with the first cases before the illness was diagnosed as typhoid. In one family the mother and four children became ill and in another three children, in addition to the man who brought home the clams and mussels. Shell fish can be sold in New York only under special permit from the health department, which has a corps of inspectors constantly checking to see that the food comes only from approved sources. The area from which these clams and mussels were taken was one in which the digging of shell fish had been prohibited because of sewage pollution of the water.

OKLAHOMA

Personal.—Dr. Lee W. Cotton, Enid, has been appointed health officer of Garfield County. Dr. Lewis J. Moorman has been appointed superintendent of State University Hospitals, Oklahoma City, to succeed Dr. John B. Smith, July 1. Dr. Smith resigned because of ill health.

Society News.—Dr. Frank H. McGregor, Mangum, addressed the Woods-Alfalfa County Medical Society, July 25, at Alva, on goiter. The Carter County Medical Society held an open meeting for the public recently at which speakers included Drs. Milton M. Miller of the U. S. Public Health Service, on milk, and John L. Day, Norman, on mental hygiene.

OREGON

Embargo on Parrakeets.—Shipment of parrakeets into Oregon is prohibited in a resolution adopted by the state board of health recently. The embargo will be maintained until it can be demonstrated that the aviaries from which parrakeets are shipped are free from infection. The resolution pointed out that cases of psittacosis are appearing in western states as a result of shipments of parrakeets from California and foreign countries and that it is practically impossible to exclude carriers of the infection.

PENNSYLVANIA

Society News.—Dr. John P. Griffith, Pittsburgh, addressed the Cambria County Medical Society, Johnstown, August 10, on gallbladder disease. Drs. Joseph T. Beardwood, Jr., and Walter Estell Lee, Philadelphia, discussed diabetes at the June meeting of the Chester County Medical Society. H. E. Corbett, D.D.S., New Bethlehem, addressed a joint meeting of the physicians and dentists of Clarion County, June 20, on "Oral Diagnosis and Relationship of Dental Infections to Systemic Disease." Dr. John M. Keichline, Huntingdon, presented an illustrated address on causes of pain in the lower right side of the abdomen. Dr. Edward Weiss, Philadelphia, made an address on "Personality Study in the Practice of Medicine" before the Warren County Medical Society, July 14.

Philadelphia

Personal.—Members of the staff of the Graduate Hospital of the University of Pennsylvania gave a dinner recently in honor of Dr. George M. Coates, celebrating his appointment as professor of otolaryngology in the University of Pennsylvania School of Medicine.

RHODE ISLAND

Society News.—Dr. Robert H. Whitmarsh reviewed biliary surgery before the Providence Medical Association, June 5, and Dr. Russell S. Bray gave an illustrated talk on "Dynamics of Peptic Ulcer Pain—An Experimental and Clinical Study."

SOUTH CAROLINA

Society News.—Drs. William R. Barron and Floyd D. Rodgers, Columbia, among others, addressed the Second District Medical Society at its semiannual meeting in Rock Hill, July 29, on ureteral strictures and on x-ray diagnosis in pulmonary tuberculosis, respectively. Dr. James H. McIntosh, Columbia, was elected president. At a meeting of the Fifth District Medical Society in York, June 1, Dr. Hamilton W. McKay, Charlotte, N. C., discussed "Problems of Mutual Interest to the General Practitioner and the Urologist." Other speakers were Drs. James Heyward Gibbs, Columbia, on "Symptoms Suggestive of Duodenal Ulcer Arising from Hookworm Infection"; John M. Brewer, Kershaw, "Diarrhea in Infancy"; Edward W. Barron, Columbia, "Gastro-Intestinal Disorders of Infancy and Childhood"; William R. Wallace,

Chester, "Buerger's Disease" and David E. Walker, Rock Hill, demonstrated a new method of reduction of dislocated shoulder. —Speakers at a meeting of the Chester County Medical Society, Chester, July 27, were Drs. Robert E. Abell, Chester, on "The Future of the Medical Profession in South Carolina"; William Egleston, Hartsville, "Public Health," and Edgar A. Hines, Seneca, "The Future of the Medical Profession in the United States." —Drs. James W. Curry and John F. Simmons, addressed the Greenville County Medical Society, August 7, on "The Use of Electricity in Gynecology" and "Rheumatic Heart Diseases in Children," respectively.

TENNESSEE

Society News.—Drs. Ralph A. Reis, Chicago, and William C. Chaney, Memphis, addressed the Gibson County Medical Society, Trenton, July 31, on "Diseases of the Cervix" and "The Irritable Colon," respectively. —Drs. Gilbert J. Levy and F. Thomas Mitchell, Memphis, addressed the Tri-County Medical Association (Carroll, Henry and Weakley counties) in McKenzie, August 8, on acute infectious diseases of children and on diarrheas, respectively. —Dr. Theodore M. Crain, Monterey, among others, addressed the medical society of White, Cumberland, Overton, Putnam and Jackson counties, July 20, on "The Use of Insulin in the Treatment of Nondiabetic Malnutrition." —Drs. Roy W. Epperson, Athens, and Jarrell Penn, Knoxville, were among speakers at a meeting of the medical societies of McMinn, Monroe, Roane and Loudon counties in Lenoir City, August 10, on "Pernicious Anemia: Diagnosis and Treatment" and "Fractures of the Neck of the Femur," respectively.

TEXAS

Personal.—Dr. William B. Veazey, Huntsville, has been appointed medical supervisor for the Texas prison system, succeeding Dr. Edgar W. Anderson. —Dr. Eugene O. Chimene, formerly assistant health officer of Austin, has been chosen director of a new combined health unit for the city and Travis County. —Dr. Don C. Peterson, Austin, formerly on the staff of the state health department, has been appointed health officer of Gregg County.

Society News.—Dr. Richard L. Sutton, Kansas City, Mo., made two addresses as a guest speaker at a meeting of the Southwest Texas (Fifth and Sixth) District Medical Society in Corpus Christi, July 11-12. Dr. Sutton's subjects were "Diagnosis and Treatment of Skin Cancer" and "Skin Manifestations of Drug Reactions." —Among physicians who addressed the Twelfth District Medical Society, July 11, in Marlin, were Drs. Sidney Israel, Houston, on "Esophagoscopy and Bronchoscopy" and Boen Swinny, San Antonio, "Treatment of the Acute Attack of Asthma." —Drs. Stanley T. Lowry and Charles C. Cade, San Antonio, addressed the Gonzales County Medical Society in June, at Nixon, on gastric ulcer and spinal meningitis, respectively.

UTAH

Society News.—The Salt Lake County Medical Society and the bar association of the city and county of Salt Lake played a joint golf tournament at the Salt Lake Country Club, August 4, followed by a dinner.

Personal.—Dr. Louis E. Viko, health commissioner of Salt Lake City, recently addressed the Utah Pharmaceutical Association at its annual convention in Salt Lake City, on cooperation between the physician and the pharmacist. —Mr. Lynn Thatcher, Logan, has been appointed sanitary engineer for the state board of health. The board is urging cities and towns of the state to improve their water and sanitation plants through loans from the new federal public works administration and it will be the duty of the new state engineer to recommend and supervise such projects.

VERMONT

Society News.—At the annual meeting and banquet of the Northeastern County Medical Society at St. Johnsbury, July 20, speakers included Drs. John P. Bowler, pyelograms as an aid to diagnosis, and Dr. John F. Gile, compression fractures of the body and the vertebrae. The speakers were from Hanover, N. H. Dr. John M. Blake, Barton, was elected president of the society at this meeting. —Dr. John P. J. Cummins, Ticonderoga, addressed the Addison County Medical Society at Lake Champlain, July 15, on "The Failing Heart of Middle Age." —Speakers before the Windsor County Medical Society at White River Junction, recently, were Drs. John F. Gile, Hanover, N. H., and Colin C. Stewart, Jr., Hanover, on "Depression Fractures of Spine" and "Tuberculosis in Childhood," respectively.

WASHINGTON

Health at Tacoma.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended August 19, indicated that the highest mortality rate (19.1) appeared for Tacoma and the rate for the group of cities, 9. The mortality rate for Tacoma for the corresponding week of last year was 6.7 and for the group of cities, 9.3. The annual rate for the eighty-five cities for the thirty-three weeks of 1933 was 11.1, as against a rate of 11.5 for the corresponding period of 1932. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits may tend to increase the death rate.

WISCONSIN

Personal.—Dr. Gilbert J. Rich, Chicago, has been appointed director of the Milwaukee County Mental Hygiene Clinic, to succeed Dr. Roy E. Bushong, who resigned last January to become director of the Ohio State Hospital for the Criminal Insane. —Dr. and Mrs. Scott F. Verbeck, Lodi, celebrated their fiftieth wedding anniversary with a family reunion, August 6.

New Ruling on Reciprocal Licenses.—The Wisconsin State Board of Medical Examiners has recently adopted a ruling which requires that applicants for a license by reciprocity must show one year's residence and practice in the state from which they reciprocate. An internship will no longer be accepted as meeting this requirement. The ruling went into effect, June 30.

GENERAL

Diploma Stolen.—The University of Illinois College of Medicine, Chicago, announces that Robert Bruce Wilson reported his diploma, dated July 1, had been stolen while he was taking the state board examination at Cook County Hospital either June 30 or July 1.

Society News.—The Aero Medical Association of the United States will have its fifth annual convention at the Palmer House, Chicago, September 3-4. —The American Hospital Association will hold its annual meeting in Milwaukee, September 11-15, and the American Protestant Hospital Association, September 8-11.

Validation Certificates Missing.—The California State Board of Medical Examiners reports that California "Validation Certificates for Admission to Professional Schools," numbered N- (North) 549 to N-599, inclusive, are hereby voided, and states that no consideration should be given them by any licensing board in the United States, since these certificates have disappeared. California's validation certificates are issued in triplicate. The original (white) is used for matriculation; the duplicate (pink) is filed with the state board of medical examiners, and the triplicate (blue) is held by the validation officer for his records.

Impostor in Jail.—It is reported that L. E. Gibson, whose activities in swindling physicians under the pretense of being an insurance man were reported in THE JOURNAL, August 19, page 612, is in jail at Millen, Ga., and that the insurance commissioner of Georgia will prosecute him. It appears that he has used the names of other firms besides the Atlas Insurance Company of New Orleans and that he varies his name from place to place, using also "E. L. Gibson" and "L. Gene Gibson." Reports of his swindles have been received by these insurance companies from a long list of physicians in southern states from Florida to California.

Changes in Status of Licensure.—The California State Board of Medical Examiners reports the following action:

Dr. Peder S. Bruguere, license suspended, July 13, for aiding and abetting an unlicensed practitioner in promoting a secret cancer remedy.

Dr. William H. Curtis, San Diego, license revoked, July 11, for narcotic derelictions.

Dr. Arthur Lee Davis, Moneta, license revoked, July 11, for narcotic derelictions.

Dr. George B. Dewees, Fresno, found guilty of habitual intemperance, July 12; penalty deferred to October meeting.

Dr. George Wellington Frasier, formerly of Weimar, placed on probation, July 11, for a period of five years without narcotic permit or possession, for narcotic derelictions.

Dr. Robert Blake Griffith, Beverly Hills, placed on probation for five years, July 11, for aiding and abetting an unlicensed practitioner.

Dr. Charles Otto Lowry, Pasadena, placed on probation, July 11, for five years without narcotic permit or privileges, for narcotic derelictions.

Dr. Richard J. Morrison, Santa Monica, placed on probation for one year, July 11, for narcotic violation.

Dr. James Archie Ramsay, Santa Monica, placed on probation for one year, July 11, for narcotic violation.

Dr. Zailik P. Saltzman, Los Angeles, placed on probation for five years for aiding and abetting an unlicensed practitioner.

Dr. Clarence Edwards, San Francisco, licensed restored, July 12, and placed on probation for five years; his license was revoked, Oct. 21, 1930, on a charge of performing an illegal operation.

The State Board of Medical Examiners of Florida recently reported the following action:

Dr. Ira W. Ballard, Miami, license revoked, June 12; he is serving a two year term in the United States Penitentiary Annex, Fort Leavenworth, Kansas, for violation of the narcotic law.

The Kansas State Board of Medical Registration and Examinations reports the following:

Dr. Jennie Elizabeth Van Epps, Tonganoxie, license revoked, following conviction of violating the Harrison Narcotic Act.

The Connecticut Department of Health recently reported the following action:

Edward L. Sollima, Greenwich, and Vincenzo Clausi, South Norwalk, licenses revoked because they had been obtained through false and fraudulent representations. Sollima had had licenses revoked in Maine and New Hampshire in 1928. It was reported at that time that these licenses had been obtained by reciprocity on the strength of a license issued to him by an eclectic examining board in Connecticut in 1906. (THE JOURNAL, May 5, 1928, p. 1484). Clausi also had a license revoked in Colorado in 1916.

LATIN AMERICA

Posthumous Tribute.—The government of Venezuela is to publish a special volume in memory of Dr. Luis Razetti, who died in 1932. Dr. Razetti is credited with the establishment of scientific medical journalism in Venezuela with the *Gaceta médica de Caracas*, of which he was the editor until 1924. He also organized the Medical College of Venezuela in 1899 and the National Academy of Medicine in 1904. In addition to numerous books, pamphlets and articles, Dr. Razetti is said to have prepared a code of medical ethics which has been adopted in several South American countries. In the medical school at Caracas he was successively professor of anatomy, operative medicine, obstetrics and clinical surgery and was instrumental in having the internship system adopted.

FOREIGN

University News.—A new institute of pathology has recently been opened at Queen's University, Belfast, Ireland. It contains quarters for the university departments of pathology and bacteriology, a museum, a library and various laboratories. It adjoins the hospitals associated with the university, which is considered an advantage over its former site at the university, as closer cooperation may now be attained between the clinical and pathologic departments.

Congress on Rheumatism.—The fourth Congress of the International League Against Rheumatism will be held in Moscow, May 3-6, 1934. Subjects to be treated are rheumatic fever; indications for balneotherapy in different forms of rheumatism and rheumatic conditions in transport workers, mine workers and metal workers. After the congress, members will visit sanatoriums and spas in the Caucasus and on the Black Sea. For further information apply to the office of the League, Keizersgracht 489, Amsterdam.

School Transferred.—The Belgian State School of Tropical Medicine has been transferred from Brussels to Antwerp and will now be known as the Prince Leopold Institute of Tropical Medicine, according to an announcement from the director, Dr. J. Rodhain. The secretariat of the Belgian Society of Tropical Medicine followed the institution and correspondence concerning it should be addressed to the institute in the future. Meetings of the society will continue to be held as before at the University Foundation, 11, rue Egmont, Brussels. The new address is 155, rue Nationale, Antwerp.

Society News.—The first congress on photographic and cinematographic documentation in the biologic and medical sciences will be held in Paris, October 5-7. Dr. Charles Claué, 39, rue Scheffer, Paris, is secretary for scientific questions and Michel Servanne, 48, rue de Romainville, for administrative matters.—The third meeting of the International Association of Preventive Pediatrics will be held in the city of Luxembourg, September 27-28. Two subjects will be treated: prevention of poliomyelitis, introduced by Dr. P. Rohmer, Strasbourg, France, and Dr. A. Wallgren, Göteborg, Sweden; and prevention of acute diseases of the first year of life, introduced by Dr. Roth, Berlin, and Dr. Frontali, Rome. Prof. G. Scheltema, Groningen, Holland, is president of the association and Dr. D. Oltramare, Geneva, rue Levrier 15, secretary. This association is the medical section of the Save the Children International Union.—An international congress on medicine in relation to athletics will be held in Turin, Italy, September 6-9.

Official Decrees.—The organization of insurance physicians of Chemnitz according to the *Münchener medizinische Wochenschrift* plans the following regulation for the cooperation of

physicians in the matter of locum tenens, referring a patient to another physician and calling another physician into consultation:

"It is prohibited: (1) that physicians of German descent and physicians of foreign races substitute for one another; (2) that physicians of German descent refer a patient to or accept a patient from physicians descending from foreign races; (3) that physicians of German descent call in physicians of foreign races into consultation. For violation of this regulation a fine will be imposed to the amount of the acquired fee, which in turn will be granted either to the fund for victims of industrial accidents or to any corresponding institution. The amount of the fee can if necessary be ascertained by an executive committee. Appeal in this matter is out of the question. If special local conditions warrant the making of an exception in the interest of the patient, a well founded argument must be made to the committee. This motion can be applied for subsequently in urgent cases. The physician concerned assumes complete responsibility for his actions."

The following order was recently issued by the medical commissioner of the Hitler government:

I command that all branches of the medical top organizations proceed in the same manner so far as the regular medical care of the insured and their dependents, which is stipulated in the federal insurance ordinance, is not interfered with by these regulations.

I also call attention to the following:

Insurance (panel) physicians can employ a permanent assistant only in exceptional cases and only with the consent of all parties concerned. The consent of the organization of insurance physicians is consequently imperative in every case. I expect that the organization of insurance physicians will give their consent, so far as it is really justified, only if the assistant is qualified first by descent and then by his suitability to practice.

Guiding principles are to be expected soon concerning the double sources of income of physicians. The indiscriminate interference of subordinate officials has no legal foundation whatever and is strongly disapproved of by the federal supervision of the NSDAP [National Socialist German Workers Party]. In accordance with the advice of the assistant of the leader, Herr Hess, I request that cases of this type which may still occur be forwarded with the respective proofs to the federal committee of the National Socialist German Physicians Organization, Munich 28, Post Office Box 2.

DR. WAGNER,
Medical Commissioner of the Reich.

Deaths in Other Countries

Dr. Sebastian Recasens, formerly dean of medicine, University of Madrid, and a former president of the local academy of medicine, August 14, aged 64, in Madrid, of cancer, according to the *Chicago Tribune*, August 15.—Dr. Willem Storm van Leeuwen, director of the Therapeutic Institute of the University of Leiden, Holland, died, July 30.

Government Services

Physicians Needed for Conservation Corps

The War Department has authorized corps area commanders to call to active duty additional members of the Army Medical Reserve Corps in the grades of major, captain and lieutenant and to employ other physicians on a full time or part time contract basis for the Civilian Conservation Camps, which are to be continued for another six months. These new physicians are needed to replace about 100 army medical officers who were to be withdrawn September 1 for regular army training activities. The latest figures show that 1,202 physicians are now on duty in conservation camps; 562 members of the Medical Reserve Corps; 150 on full time contract basis; 127 on part time contract basis; 216 naval medical officers, and 147 army medical officers. Applications for this service should be made to corps area commanders. A list of corps areas and the states included in each was published in THE JOURNAL, July 15, page 219.

CORRECTION

The Newer Treatment of Strychnine Poisoning.—Drs. Samuel Stalberg and Harold S. Davidson, authors of the article on "The Newer Treatment of Strychnine Poisoning," THE JOURNAL, July 8, write to say that their article may have given the impression that the police surgeon of Atlantic City, Dr. Carl Surran, saw their patient and made an incorrect diagnosis. The police surgeon referred to was not Dr. Surran.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 12, 1933.

The Pathology of Sudden Death

Dr. T. H. B. Bedford of the department of pathology and bacteriology at Leeds University has published in the *Journal of Pathology and Bacteriology* a review of the postmortem records of the Leeds General Infirmary for the twenty-one years ended 1930 concerning the patients dead on arrival at the hospital, from causes other than trauma or suicide. Most of the persons had collapsed in the streets or while at work. A few had been sent to the hospital for acute disease and died on the way. There were 154 male and 44 female patients, and sixty, or nearly one third of the deaths, occurred between the ages of 61 and 70 years.

DISEASE OF THE CIRCULATORY SYSTEM

In by far the largest number of cases, 73 per cent, death was due to disease of the circulatory system. In 122 cases of lesions of the heart, they were never simply valvular but always involved the myocardium. Similarly, in gross disease of the coronary arteries the myocardium was also affected. The average age of those with valvular disease was 54, with non-valvular disease 58. With regard to the valves affected, there were twenty with aortic lesions, eight with mitral and aortic combined, and seven with mitral. Of the twenty-eight with aortic disease, only five were females, and in only four was syphilis recorded as the probable cause. Of the pure aortic cases, fourteen were examples of incompetence and the others of stenosis. In fifteen cases there were gross lesions of the coronary arteries, in twelve of which they were definitely atheromatous. In twenty-four cases the coronary arteries were said to be healthy. All seven cases of mitral disease were examples of stenosis, and five of these were in females.

Of sudden deaths in which the valves were not affected, death was held to be due in sixty-three of eighty-seven cases of degenerative disease of the coronary arteries. In nearly half of the cases there was marked fibrosis of the myocardium, but in only three were fatty changes described. In twenty-seven there was evidence of myocardial infarction, in fourteen of which it was recent. The acute terminal myocardial infarction may be more frequent than recorded, as only in recent years has the importance of coronary thrombosis and myocardial infarction been recognized. Rupture of the heart occurred in six cases—in three from softening of an acute infarct and in the other three from rupture of an aneurysm formed in the infarcted area. Taking all the necropsies, the coronary arteries were diseased in 104, or 53 per cent.

Aneurysm of the aorta was found in twenty-two cases, of which only three were unruptured. Eleven ruptured into the pericardium, four into the left lung, two into the right pleura, and two into the trachea and bronchi.

DISEASES OF THE RESPIRATORY SYSTEM

In nineteen cases, death was due to lesions of the respiratory apparatus. Hemoptysis accounted for seven, of which six were tuberculous and one was a carcinoma of the right bronchus. Pneumonia accounted for six. In six cases there was obstruction to the main respiratory passages.

DISEASES OF THE NERVOUS SYSTEM

The central nervous system accounted for fifteen cases, all hemorrhages, the average age being 48. In ten the hemorrhage was subarachnoid; in three, intracerebral; in two, intracerebellar. Usually the source of bleeding was at the base of the

brain. Arteriosclerosis was noted in five cases, and in six high blood pressure was indicated by hypertrophy of the left ventricle. These figures bear out the dictum of Brouardel: "Of all sudden and unexpected deaths, apoplexy furnishes the fewest necropsies and inquests."

FAILURE OF NECROPSY TO SHOW CAUSE OF DEATH

In fifteen cases, or 8 per cent, the necropsy failed to account for death. This figure is in accordance with the experience of the French pathologist just mentioned, who found that, no matter how careful the necropsy, it was impossible to determine the cause of death in from 8 to 10 per cent of the cases. But he considered that this failure was often due to decomposition. In none of the cases of the present series was the pathologist hampered by postmortem changes. Four cases were registered at the time as examples of status lymphaticus. But in view of the conclusions of a committee appointed to consider the subject of status lymphaticus that there is no such condition, they are now placed among the deaths from unknown causes.

The Storage of Food

The Department of Scientific and Industrial Research has issued a report of the Food Investigation Board on work carried out under the department with the object of improving food-stuffs in quality and preventing wastage by improved methods of handling and storage. Remarkable progress has been made in the commercial gas storage of home-grown apples by the control of the carbon dioxide and oxygen in the atmosphere of the store by regulated ventilation. This type of storage has proved so successful that it has been rapidly doubled and now amounts to 1,750 tons, and there is little doubt that in a few years it will be ten times what it is today. It is pointed out that, after being gathered, apples and other fruit are living bodies exhaling carbon dioxide. A secret of long storage is to keep their respiratory activity low. In the storage of all fruit there comes a time when the respiratory activity rises rapidly for a short time. This period is called the climacteric. Coincidentally with this an active substance is developed in apple vapor which will produce a climacteric change in other fruit exposed to it. Following an American observation that ripe apples placed among potatoes retard sprouting, it has been discovered that the growth of young pea seedlings and other seeds is delayed or distorted by exposing them to the air that has passed over ripe apples. Experiments on tomatoes indicate that a storage period up to five weeks may be a commercial proposition.

THE STORAGE OF CHILLED BEEF

Important results have been attained in connection with the storage of chilled beef. In ordinary air, chilled beef can be kept in store for about one month. Then it rapidly deteriorates. This period permits the marketing of chilled beef from Argentina in this country, but it is too short for Australian and New Zealand beef. But it has been found that comparatively low concentrations of carbon dioxide prevent the growth of the molds and bacteria commonly found on chilled beef. Roughly speaking, a concentration of 10 per cent doubles the storage life of hind quarters of chilled beef, but concentrations above 20 per cent destroy the freshly killed appearance of meat, so important in marketing. Attention is now being given to the application of these researches, so that the proper percentage of carbon dioxide may be maintained in the large refrigerated space of the ship's hold. Surveys on the leakage of carbon dioxide from refrigerated holds carrying fruit have shown that the leakage is considerable. The importance of these experiments lies in the fact that because of the distance chilled meat cannot now be imported from Australia or New Zealand. Meat from these countries has to be frozen, which diminishes its marketable value. In Australia, experiments are also being made on the preparation of chilled meat for export and on the

effects on storage of the past history of the meat. While frozen pork keeps remarkably well, chilled pork fetches better prices. Neither Australia nor New Zealand can export chilled pork to this country, since after three or four weeks microbes grow on the skin and the fat becomes rancid. Gas storage experiments have therefore been extended to pork. Other subjects dealt with in the report are the gas storage of bacon, methods of bacon curing, the degree of infection to which meat is subjected in handling, corrosion in relation to canning, the brine freezing and smoke curing of fish, fluctuation in the potency of vitamin A in halibut's liver, and the use of fish liver in pernicious anemia.

Amalgamation of the Ross Institute with the London School of Hygiene and Tropical Medicine

As there is considerable overlapping of the work of the institute founded by the late Sir Ronald Ross and that of the London School of Hygiene and Tropical Medicine, it has been decided to amalgamate them. There will be established within the school as a permanent memorial to Sir Ronald Ross a department to be known as "the Ross Institute of Tropical Hygiene." Laboratory accommodation will be provided for Sir Aldo Castellani, director of the Ross Institute, who will take with him his laboratory staff. He will be appointed to the staff of the school with the title of director, and for his hospital work the managers of the Seamen's Hospital Society will appoint him to the associated staff of their hospital for tropical diseases. The hospital at the Ross Institute will be closed down and the patients received into the Seamen's Hospital. The position of director of tropical hygiene at the school, which has been vacant since the death of Sir Andrew Balfour, will be filled by Sir Malcolm Watson, who was principal of the malaria prophylaxis and control department of the Ross Institute. Had Ross been alive, nothing would have given him more pleasure than that the teaching of malaria should be in the hands of his friend and disciple, Sir Malcolm Watson. The India branch of the institute will become an intrinsic part of the amalgamated body, and Dr. G. C. Ramsay will continue to be its principal. The industrial advisory committee of the institute will also be continued in the school.

The Prevention of Hereditary Blindness

The Prevention of Blindness Committee of the Union of Counties Associations for the Blind has issued an important report on hereditary blindness. Notwithstanding the large number of investigations by ophthalmologists and genetic experts, the data have been obtained from too selected a field for accurate estimation of the extent to which blindness can be prevented by the limitation of parenthood. No authentic knowledge has been obtained of the extent to which diseases of genetic origin occur sporadically and apparently devoid of genetic potentiality. Cases can be pointed to in which one man or woman suffering from, say, retinitis pigmentosa has resulted in some forty cases of blindness in subsequent generations. But no one knows the proportion of the total number of persons suffering from such disease who have married without any such ill effects.

The committee issues with its report an elaborate schedule of six folio pages giving particulars for drawing up a pedigree and for the examination of blind persons. Complete statistics compiled (1) on a uniform basis, (2) on the evidence of properly qualified persons, and (3) including all persons affected by the diseases and not only those selected from certain pedigrees would assist in determining the total amount of blindness that can be prevented by the control of parentage. At present such statistics do not exist. Better certification of the blind population and the ascertainment of the cause of blindness, by the use of the form of report which the committee has recom-

mended, are also required. However, certain general conclusions can be drawn from the present data: 1. The most important heritable diseases are retinitis pigmentosa and Leber's disease (hereditary optic atrophy). 2. If a member of a stock in which there is definitely heritable disease causing blindness marries, even if the disease is not manifest in his or her case, he or she should consult an ophthalmologist, who, with the assistance of a pedigree, would advise as to abstention from parenthood. This does not apply to males in a stock carrying Leber's disease, except in the exceptional families in which males have been known to transmit. 3. Unless there is medical evidence to show that the case does not fall within the hereditary class, a blind person contemplating marriage should seek the advice of an ophthalmologist, in view of the complex nature of the problem and the serious handicap imposed on the children of persons suffering from heritable eye disease. The ophthalmologist will no doubt obtain a pedigree and, if necessary, consult a genetic expert.

Increase in Automobile Accidents

During the first six months of the present year there were seventy-three more persons killed and 1,877 more injured in the streets of London than in the corresponding period of 1932. The Pedestrians Association is gravely concerned and connects the increase with the recent road traffic act, which sought to reduce accidents by abolishing the speed limit and increasing the penalties for dangerous driving. The abolition of the speed limit does not mean that drivers can go as fast as they like but that the question of dangerous speed is to be decided by the circumstances and not by any particular figure. The Pedestrians Association says that the speed of cars has increased by 10 or 15 miles an hour, demanding much greater skill on the part of the driver and a much higher standard of judgment in crossing the roads on the part of the pedestrian. The association therefore calls on the government to accept the advice tendered by the commissioner of police for the metropolis for a speed limit to be sternly enforced.

PARIS

(From Our Regular Correspondent)

July 19, 1933.

Protest Against Diplomas for Specialists

Medical opinion is aroused, especially in the syndicates, over the suggestion of certain officials with reference to the granting of diplomas for the various specialties. The suggestion is that, in addition to the diploma of doctor of medicine, there be established doctorates of surgery, ophthalmology, otorhinolaryngology, stomatology, electroradiology and psychiatry. There are already certificates awarded by the Faculté de médecine to doctors who have pursued special courses of instruction; but they have no value other than to give some advantage in securing official positions. It is evident, as has been emphasized by the Fédération des Syndicats médicaux de la Seine, that such a division of the doctor's diploma would give the unfortunate impression that the single doctor's diploma does not furnish the public a guaranty of competence for all cases coming under the heads of the various specialties. Especially in the homes of the well-to-do, the general practitioner would be dismissed, in many instances, in favor of the diplomaed specialist, without the family physician being consulted as to the choice of his successor. Another grave aspect of the situation is that the courts, in case a general practitioner is sued by a dissatisfied client, would not miss the opportunity to overwhelm the physician. A practitioner who, for example, had removed impacted wax from the auditory canal, without having succeeded in curing deafness due to some other cause, might find himself accused of exceeding his rights. The creation of a doctor diploma in surgery has given rise to the most protests. The

question is, of course, not new. For many years, some of the most eminent surgeons have demanded the creation of such a diploma, which would be a means of distinguishing them, in the eyes of their clientele, from the rest of the medical profession, and which would, at the same time, give them a valuable privilege. It cannot be denied that many practitioners, particularly since the war, after serving four years as aids in an ambulance unit, have sometimes presumed to set themselves up as surgeons, though lacking an adequate knowledge of surgical technic. That is the principal argument advanced by the professional surgeons, and it is not without value. However, their suggestions may be inspired more by envy than by public interest. The surgeon demands higher fees, and when he is called directly by a patient, without the advice of the family physician, he may neglect the latter. The *Fédération des Syndicats médicaux* has filed a protest against the plan of creating supplementary doctorates. It emphasizes that the value of a specialist is based on his success and his fame, and that it is the duty of the family physician to guide his client in the choice of a good specialist, instead of allowing his client to make his own choice on the sole indication of an official title or simply by consulting a directory of surgeons.

Research on Treatment of Pseudarthroses

Before the *Société de chirurgie*, Dr. Küss presented the results of research by Dr. R. Imbert of Marseilles on a method of treating pseudarthroses, which consists in injecting into the focus of the pseudarthroses blood serum derived from a person with a bone fracture that is undergoing normal consolidation. Imbert's research dealt with three cases, one of which concerned a fracture that, five months after the accident, showed no sign of bone callus. Three times, 10 cc. of serum from another patient in full process of osteogenesis was injected into the focus of the fracture. Permanent healing occurred in three months. In two similar cases treated by Dr. Imbert, Sr., the same result was secured by simply injecting the blood serum under the skin. Guyot at Bordeaux secured similar results. The experiments show that normally the blood contains the necessary substances for the fixation of calcium in patients with fractures but that these substances may be lacking in some persons. Küss recalled the experiments of Pétrault on dogs and of Luiji Baj on guinea-pigs and pointed out the importance of the research of Damboviceanu and Cosacesco on the calcification of the shell of the lobster during the shedding period. He accepted the efficacy of the treatment of delayed callus formation or of pseudarthroses by the injection of blood serum into fractures.

Tuberculous Origin of Some Cases of Dementia Praecox

The question of the tuberculous origin of some cases of dementia praecox continues to be discussed. It appears that in some cases a relation between these two diseases is justly suspected. Professor Claude adheres to this theory. F. Coste, J. Valtis and Van Deinse, at the *Clinique des maladies mentales de la Faculté de médecine*, and at the *Institut Pasteur*, studied numerous patients with dementia praecox and injected their blood and cerebrospinal fluid into experimental animals. The results, reported by Professor Claude to the Academy of Medicine, concern their first fifteen patients and eight controls, affected with various mental diseases. The results were negative for the controls, but the authors isolated in nine dementia praecox patients out of fifteen (from the blood or the cerebrospinal fluid) acid-resistant bacilli that appeared to correspond eight times out of nine to the tuberculous ultravirus, and only once to the typical Koch bacillus. They studied likewise the allergic reactions of dementia praecox patients and found them sometimes nonexistent but quite often normal or merely weakened.

BERLIN

(From Our Regular Correspondent)

July 24, 1933.

Research on the Respiratory Ferment

In continuing his research on the respiratory ferment, Otto Warburg has made a discovery, on which he reports in the *Biochemische Zeitschrift*. He has succeeded in getting the respiratory ferment, the existence of which could heretofore be proved only indirectly, on a suitable object directly under the spectroscope, and thus to render it visible. By means of an ingenious indirect method, Warburg had, as it were, determined the chief properties and the spectrum of the respiratory ferment. There is, namely, an inactive union with carbon monoxide, as in hemoglobin. This compound, however, is easily decomposed by light and thus the respiratory ferment again becomes active. In this restoration of the action, only those portions of the light can act that are taken up and absorbed. By ascertaining through a test which portions of the light rays are active, Warburg was able to determine indirectly the absorption spectrum of the respiratory ferment. The respiratory ferment proved to be a substance resembling the blood pigment hemin. In the oxidized condition it oxidizes, on the one hand, the cellular substances and is, at the same time, reduced to a different substance, haem, with a different spectrum. This substance takes over oxygen from the air and again becomes hemin. This process completes the circle; the ferment hemin is again present, but the cellular substances have been oxidized with the aid of the oxygen from the air.

Warburg has now been able to demonstrate directly these spectral changes in the ferment hemin. The bacteria of acetic acid consume a large amount of oxygen and are unusually rich in respiratory ferment. What is impossible in other cells, because of the small quantity of respiratory ferment, namely, to bring it directly under the spectroscope, along with other similar dyes, was accomplished here owing to the relatively high concentration. One can see the ferment hemin directly and can measure its changes. Warburg's computation proved to be correct. The main linkage of the carbon monoxide compound lay exactly where he had assumed it to be (in the yellow). If oxygen is introduced, the expected transformation into the oxidized phase occurs, being recognizable by a shifting toward the red. Thus the important self-oxidation of the ferment haem to hemin is directly demonstrated. Of especial importance for the theory are two other observations: hydrocyanic acid does not check the absorption of oxygen, but it does prevent the reduction of haem. This observation confirms the assumption of Warburg that the complete paralyzing effect of hydrocyanic acid on cellular respiration lies in the fact that the oxidized ferment hemin cannot be reduced at the expense of the cellular substances—in other words, it cannot attack the cellular substances. It is equally interesting that in the case of the other cellular substance resembling hemoglobin, cytochrome (whose rôle is still obscure), hydrocyanic acid, on the contrary, interrupts oxidation. The main linking of the reduced cytochrome in the green remains unchanged in the presence of hydrocyanic acid, when oxygen is introduced, whereas, as already stated, the linking of the ferment hemin shifts toward red. These results are deserving of careful attention, because they doubtless furnish a definitive answer to the important question as to how the respiratory ferment acts as a catalyzer.

Government Aid for the Promotion of Marriages

In many previous letters, attention has been directed to the increasing decline in the birth rate of the German reich. The most recent figures of the federal bureau of statistics are horrifying. These statistics reveal that, for the first year since 1841, from which year date the uninterrupted statistics on population, the number of births in Germany dropped below

1,000,000. Germany's record of 978,161 living births for 1932 fell below that of Italy (992,049), which has a much smaller population. From the standpoint of the relation of the total number of births to the total population, Germany occupies, after Sweden, the lowest position in Europe. Germany's birth rate is lower than even that of France, whose two child system has, for many years, been cited as a warning example. Whereas, in 1928, Germany registered 18.6 living births per thousand of population and France 18.2 per thousand, Germany's birth rate last year dropped to 15.1, while the birth rate of France declined only to 17.2. The situation becomes much clearer if the figures for various years are placed side by side. The number of births per thousand married women in Germany for the years listed was as is shown in the adjoining tabulation.

Years	No of Births
1913.....	203.3
1928.....	127.9
1930.....	118.3
1932.....	100.7

It is evident, therefore, that, since 1913, the number of legitimate births has declined one half.

This startling decline in Germany's birth rate is due, to a great extent, to the existing economic conditions. In comparison with the number of marriages that would have been contracted by the corresponding groups during the years just preceding the war, at least 300,000 marriages failed to be contracted during the last four years. Further, at least 300,000 marriages have been childless or have been limited to from one to two children. Since, during the past few years, the exceedingly large prewar age groups became of marriageable age, the number of marriages and the number of births would, under normal conditions, have been large. The decline in the birth rate is to be viewed, therefore, with considerable apprehension, because of the fact that, during the next decade, the weakly represented war and postwar age groups will come of marriageable age. Even with a percental increase in the birth rate, it is more than likely that, in the next decade, there will be a further decline in the actual number of births, which now is no longer sufficient to preserve the existing status of the German people. In the large cities the condition is alarming. Considering the average birth rate throughout Germany, the births still suffice for the preservation of two thirds of the existing status, but in Berlin, as Professor Lenz of Munich has pointed out, the total number of births is hardly sufficient to preserve a third of the present population. In 1931 there were in Berlin 38,110 births among the mothers who were permanent residents. Applied to 46,200 marriages, the average for the years 1928-1930, that would be 0.83 birth per marriage. But since 3.1 births are needed for the preservation of the present status, only one fourth of the status of the Berlin population is preserved by its own parents. For all German cities with more than 100,000 inhabitants, the number of births in 1931, applied to the marriages of the years 1928-1930, gives 1.18 births per marriage. The population of the German large cities is preserving, therefore, only one third of its present status, while Berlin is preserving still less.

This decline in the population is now hidden to a great extent by the fact that the existing individuals continue to live on for a few decades. On account of the shifting in the distribution of the age groups, the number of aged persons will increase from 3,500,000 in 1925 to (presumably) 8,250,000 in 1972 and will thus reach an unusually high percentage of the total population. For that reason the younger generation will have to shoulder increasing burdens in the form of annuities and pensions.

According to careful computation, the age groups belonging at present to the propagating period will leave, on the average, a posterity that, after the lapse of a generation, in about the year 1960, will comprise only two-thirds the number of the

previous generation. The generation that, in 1960, is in the propagating period will, if the birth rate does not rise again, leave a posterity that will comprise only 44 per cent of the generation propagating in 1930. Toward the end of the present century, the German people would be reduced to 40 per cent of its current status. According to further computations of the same nature, the present population of the German large cities, at the end of this century, would have a posterity amounting only to one eighth of the present status, while Berlin would have only one twentieth of its present status. These computations are all based on the assumption that the decline in the birth rate does not drop still further.

The statements serve to explain the measures adopted by the federal government. At present, the most conspicuous measure, along with more strict enforcement of the laws against abortion, is the granting of government loans to newly married couples, which provision is closely associated with the law pertaining to the reduction of unemployment. The funds for the granting of such loans to young married couples are secured through a tax on the income of single persons. The application of this special tax is far reaching; for, up to the age of 55, not only unmarried persons are affected but also childless widowers, widows and divorced persons, although unmarried women who are having their taxes partly remitted because of the necessity of supporting illegitimate children are exempted from the special tax. On the contrary, men who have to provide for illegitimate children are nevertheless subject to the tax. The tax rate increases rather rapidly with the income of the taxpayer, rising from 2 per cent for a monthly income of from 75 to 150 marks (\$24.74 to \$49.48, current value) to 5 per cent for 500 marks (\$162.25) or more. The previous tax of 1 per cent on single persons has been abolished. From the funds so collected, up to 1,000 marks (\$324.50) may be loaned for the purchase of furniture and house furnishings, the amount varying with local conditions, provided the future housewife has been previously employed (and agrees, when married, to resign her position and to refrain from working as long as her husband has a monthly income of at least 125 marks (\$40.56).

The federal government expects to be able to promote 150,000 marriages with the aid of the special fund, and, if that is possible, it will constitute an important gain from the demographic point of view. It will doubtless have the effect of increasing the birth rate. According to computations of the federal bureau of statistics, however, the number of postponed marriages is at least twice 150,000. Every means is to be provided to protect and to aid the growth of families.

The New Federal Tuberculosis Commission

The Deutsches Zentralkomitee zur Bekämpfung der Tuberkulose, since the resignation of its chairman, Dr. Hamel, has been changed into a federal tuberculosis commission. The commission owes its origin to the idea of a military physician, Dr. Pannwitz, of utilizing an emergency hospital, constructed, in 1895, out of the Döcker garrison, for the treatment of tuberculosis. He established the Volksheilstättenverein vom Roten Kreuz, which soon opened a therapeutic center in this garrison.

A few years after the founding of the therapeutic centers, it was recognized that they were not the sole solution of the tuberculosis problem; hence there resulted the transformation into a Deutsches Zentralkomitee zur Bekämpfung der Tuberkulose, which then assumed a leading position. It organized the first international tuberculosis congress, held in Berlin in 1899, thus bringing together physicians, investigators, administrations, economists and social insurance bodies for cooperative endeavors. It was important that the funds expended by the reich for combating tuberculosis passed through the hands of the Central Committee. The expenditures in 1930-1931 amounted to 300,000 marks (\$71,400) but, as the economic crisis increased in severity,

the funds available for that purpose shrank. The employees' insurance fund contributed often as much as 500,000 marks (\$119,000) a year. This sum was expended, for the most part, for the benefit of persons holding employment insurance. The Central Committee established also a center for the treatment of lupus patients. Later on, the Deutsches Zentralkomitee furnished the impulse for the creation of similar centers in nearly all civilized countries. It effected also, in 1902, the foundation of the Internationale Vereinigung gegen die Tuberkulose, which expired with the outbreak of the World War. Then France brought about the creation of a new international league, in the sessions of which Germany did not participate until it received, in 1928, a general invitation to take part in the meeting to be held in Rome. The Reichs-Tuberkulose-Ausschuss (federal tuberculosis commission), which has replaced the Central Committee, is likewise connected with the federal ministry of the interior. The chairman (at present, Dr. Bartels) will, in the future, be the official spokesman, and in his hands will lie the appointment and dismissal of the other members of the directorate, who must be of German stock.

Fifty Years of Health Insurance

On June 15, fifty years had elapsed since the first law pertaining to federally controlled health insurance was enacted. The imperial decree of Nov. 17, 1881, had established as a social magna charta the principles according to which, during the following decades, the comprehensive measures of the government for the protection and insurance of its citizens working as employees were to be applied. The first law that, in execution of the imperial decree, was proclaimed was the health insurance act, which went into effect, Dec. 1, 1883, and which, in spirit and principle, still controls today the health insurance laws of Germany. The law has been revised several times and the circle of persons protected has been enlarged and the effectiveness of the insurance provided has been increased. Later, the health insurance act was incorporated in the federal insurance decree. In the beginning, the health insurance system gave protection to between four and five million insured. In 1929, when the number of members reached the maximum, 22,000,000 persons were receiving protection. At present, however, about 19,000,000 members are enrolled.

Fewer Local Medical Journals

In addition to the scientific medical journals, there are, almost everywhere in Germany, within the jurisdictions of the so-called Aerztekammern, or chambers of physicians, periodicals that treat solely of professional problems. An attempt is being made to bring about, in this field, greater simplicity and uniformity. The commissar of the medical syndicates (Spitzenverbände), who is also the executive director of the national-socialist league of physicians (Aerztebund), has prohibited the organizations of the Länder and the provinces from creating new journals and has forbidden the existing journals to enter into any new legal contracts. This control is welcomed by many, since the greater part of these provincial professional journals, aside from the local news, contained little that was worth while. Also the two journals of the large medical syndicates (Spitzenverbände), which were of an excellent type, have been merged since July 1 under the title previously employed by one of the journals: *Deutsches Aerzteblatt*.

Researches of the Emperor William Society for the Advancement of Science

From the annual report of the Kaiser Wilhelm-Gesellschaft zur Förderung der Wissenschaften, it appears that the scientific work of the society has progressed, although hampered by financial difficulties. The society numbered on April 1, 1933, 786 members, as compared with 828, the year before. Of the large number of new researches, only those bearing on chemistry and physics will be mentioned.

At the center for microbiologic research in São Paulo, Brazil, Professor Ficker succeeded in transmitting human leprosy to a white rat, which, a year and a half after inoculation, presented the first signs of tumor development. This transmission of leprosy from man to rat is an exceptional case.

At the Kaiser Wilhelm-Institut für Anthropologie in Berlin-Dahlem, von Verschuer and Diehl gave a precise demonstration of the hereditary factor of tuberculosis. The results of their research on tuberculosis in twins have been published in book form.

In the biologic institute in Berlin-Dahlem, Jollos secured, through the influence of environmental factors, mutations of the *Drosophila* fly with constant definite trends, so that it could be predicted with a fairly high degree of accuracy in what direction an animal treated with moist or dry heat would mutate. The most important thing is the fact that the same causes that produce in an animal modifications (that is, nonhereditary changes) often give rise to genuine mutations as a result of frequent treatments of the larvae in successive generations. It is not a question of hereditary transmission of acquired qualities, as the mutants thus far have all been the offspring of unchanged parents, whereas the flies that were changed themselves have produced only normal progeny. If these observations are confirmed, they will be of immense importance in connection with the most important problems of racial origin and racial development.

BUCHAREST

(From Our Regular Correspondent)

Aug. 5, 1933.

The Bill on Abortion Fails to Pass

According to the late statistical reports, the number of deaths due to secret abortions performed by physicians, midwives and neighbors amounts to about 60,000 yearly. This frightful number of deaths has moved humanitarians to propose to the government the drafting of a new law that will authorize the ministry of public hygiene to establish advisory centers for women, to teach them about birth control. The proposal was wrecked by the strong opposition of the clergy, so there was nothing to do but to make induced abortion lawful, if performed by competent physicians. A committee has been appointed by the ministerial council to draft the text of the new bill. The committee heard almost all leading physicians and jurists of the country but did not consult any members of the clergy. The bill was drafted and the chamber of deputies dealt with it in June with the result that there were just as many votes for as against the bill. The question has been decided by M. Popovici, minister of justice, president of the special committee, who voted against the bill arguing that it is quite unnecessary in Rumania, a country capable of maintaining seven times as many people as it has at present. With his vote this modern act became a failure.

The Seventieth Birthday of Professor Marinescu

Dr. Marinescu, professor of neurology and psychiatry at the University of Bucharest, the founder of scientific neurology, reached his seventieth birthday, July 11, and for the occasion the university, the ministry of public health and the ministry of instruction arranged appropriate ceremonies. The premier, Dr. Vajda-Voevod, a physician, presented him with a luxurious volume, compiled by his friends, colleagues and pupils. The volume comprises 751 pages and contains sixty-seven treatises, twenty-one of which were written by Rumanians. The preface was written by Professor Ramon y Cajal of Madrid, who wrote about Professor Marinescu as follows: "His activity was many sided. His establishing of the source of the bulbar nerve nuclei, his treatises on the pathology of the neuron, his magnificent analysis of senile changes in the nervous system, his

research on the regeneration of nerves, and other investigations are definite contributions to medical science." In his reply, Professor Marinescu advised the youth to cultivate science. There is a need for science at present. He said that the masses are passionately interested in boxing matches and are indifferent to scientific problems. Science can be cultivated only with enthusiasm; the industrialization of science leads to commercialism. There is no need for becoming disheartened, however. Physicians, imbued with the scientific spirit, should enter their laboratories—the churches of the future—trustfully and ask themselves what they have learned each day. The knowledge of duties well done brings peace.

Physical Defects in Rumanian School Children

Prof. G. Banu and his collaborators examined 4,149 grade school children and found that 18.9 per cent of them had an unsatisfactory blood supply of the skin, 3 per cent had scabies, 4.4 per cent had various dermatoses, 7.5 per cent had pediculosis, 61.4 per cent had hypertrophied tonsils, and 11.1 per cent had adenoids. Dental caries was found in 75.3 per cent of all children, and from one to ten teeth were missing in 51.1 per cent. A majority of the children suffered from enlarged lymphatic glands. Bad posture has been established in 20.8 per cent of the children; one-sided scoliosis was found in 20.6 per cent, and deformed and curved limbs in 2.5 per cent. Impaired vision was found in 12 per cent and impaired hearing in 9.5 per cent.

Rumanian Spas

The ministry of public hygiene appointed a committee to establish the indications for using the notable bathing resorts of Rumania; this measure became necessary by reason of the indiscriminate establishing of indications by the proprietors. It took four years of hard work, mainly done by the National Analytic Laboratory and by the board of the Balneological Society, to perform this great work. The number of waters found to have some curative properties is several hundred.

Marriages

CYRUS WARREN STRICKLER, JR., Atlanta, Ga., to Miss Elizabeth Magruder Horter at Linville, N. C., in July.

J. GRAFTON LOVE to Miss Mary Elizabeth Terry, both of Rochester, Minn., at Nashua, Iowa, June 29.

DEAN STANISLAW VAN HECKE, Phillips, Wis., to Miss Esther Adeline Helsing at Merrill, July 31.

YALE NORMAN LEVINSON, Chicago, to Miss Sally Brounstone of Montreal, Que., Canada, July 14.

JOHN ARTHUR ALVAREZ, Boston, to Miss Margaret Elizabeth Cate of Morgan, Texas, August 20.

J. HOWARD ANDERSON, Hemphill, W. Va., to Miss Martha Via Stewart of Milan, Tenn., June 24.

ALEXANDER RICHMAN to Dr. CHARLOTTE DOROTHY YUDELL, both of New York, June 11.

GORDON MAXWELL PERISHO to Miss Mirriam Ann Holderman, both of Morris, Ill., August 12.

RALPH CADWALLADER MITCHELL to Miss Martha Cawood, both of Eccles, W. Va., June 24.

WINSTON F. HARRISON, Montreal, Que., Canada, to Miss Anna Blair Thornton, July 22.

ROBERT L. WHITESIDE to Miss Grace Rendleman, both of Jonesboro, Ill., June 26.

FRED T. RENICK, Crozet, Va., to Miss Frances Hughes of Harrisonburg, July 10.

TRUMAN L. BOYES to Miss Catherine Frances Kelly, both of New York, July 24.

CHARLES E. EINER, St. Louis, to Miss Agnes Stanley of Chester, Ill., July 26.

RAYMOND E. SELDERS to Miss Wilma Scheer, both of Houston, Texas, June 27.

Deaths

Edmund Denegre Martin, New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1891; member of the House of Delegates of the American Medical Association in 1909; member and president of the Louisiana State Medical Society; member of the Southern Surgical Association; charter member of the American College of Surgeons; past president of the Orleans Parish Medical Society; emeritus professor of surgery and formerly dean, Tulane University Graduate School of Medicine; on the staffs of the Charity Hospital, Touro Infirmary and the Eye, Ear, Nose and Throat Hospital; aged 70; died, July 21, of nephritis and arteriosclerosis.

James Phares O'Kelley @ New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1893; professor of clinical otology, rhinology and laryngology at his alma mater; member of the American Laryngological, Rhinological and Otological Society and fellow of the American College of Surgeons; on the staff of the Southern Baptist Hospital; aged 62; died, July 17, of heart disease.

Harvey Samuel McKay @ St. Louis; Beaumont Hospital Medical College, St. Louis, 1901; professor of surgery, St. Louis University School of Medicine; member of the Southern Surgical Association and the Western Surgical Association; fellow of the American College of Surgeons; aged 54; on the staff of the St. Anthony's Hospital, where he died, July 22, of nephritis.

Henry Fremont Lueking @ Capt., M. C., U. S. Army, Fort Leavenworth, Kansas; Washington University School of Medicine, St. Louis, 1918; served during the World War; was appointed a first lieutenant in the medical corps of the U. S. Army in 1924 and was made a captain in 1926; aged 40; died, July 28, of injuries received in an automobile accident.

Charles Joseph Hettesheimer, Hempstead, N. Y.; University of the City of New York Medical Department, 1892; member of the Medical Society of the State of New York; formerly member of the board of education of New York; for twenty-five years a member on the staff of the Bethany Deaconess Hospital, Brooklyn; aged 69; died, July 30.

Edward Wright Russell, Bangor, Maine; University of Pennsylvania School of Medicine, Philadelphia, 1902; member of the New England Society of Psychiatry; formerly on the staff of the Bangor State Hospital; aged 57; died, March 15, at Orrington, of pulmonary tuberculosis and diabetes mellitus.

George Henry Moore @ Aledo, Ill.; St. Louis University School of Medicine, 1904; president and formerly secretary of the Mercer County Medical Society; chairman of the board of health of Aledo; served during the World War; aged 62; died, July 26, in the Mercy Hospital, Davenport, Iowa.

Harold Caldwell Dilworth, Jasper, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1927; member of the Medical Association of the State of Alabama; aged 31; on the staff of the Walker County Hospital, where he died, July 14, of streptococcal sore throat.

Thomas Newton Rodman, Batesville, Ark.; Memphis (Tenn.) Hospital Medical College, 1902; member of the Arkansas Medical Society; past president and secretary of the Independence County Medical Society; aged 65; died, July 20, of carcinoma of the bladder.

Albert Douglass Cuskaden, Atlantic City, N. J.; Jefferson Medical College of Philadelphia, 1892; member of the Medical Society of New Jersey; formerly member of the board of education; aged 72; died, July 21, in Ventnor City, of angina pectoris and myocarditis.

Jane Elizabeth Hoyt Stevens, Concord, N. H.; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1890; member of the New Hampshire Medical Society; aged 72; died, July 1, of hemiplegia and cerebral thrombosis.

Charles F. J. Coughlin, Baltimore; College of Physicians and Surgeons, Baltimore, 1912; member of the Medical and Chirurgical Faculty of Maryland; aged 47; died, July 27, in St. Mary's Hospital, Rochester, N. Y., following an operation for appendicitis.

Charles T. Carroll @ Morristown, Tenn.; Tennessee Medical College, Knoxville, 1898; past president and secretary of the Hamblen County Medical Society; on the staff of the Morristown General Hospital; aged 60; died, July 26, of carcinoma of the larynx.

Dwight Crofutt Broga ☉ Rome, N. Y.; Syracuse (N. Y.) University College of Medicine, 1905; on the staff of the Rome Hospital and the Murphy Memorial Hospital; aged 53; died, July 22, of acute nephritis following an operation for intestinal obstruction.

George William Harris, Los Angeles; University of Michigan Medical School, Ann Arbor, 1879; University of the City of New York Medical Department, 1887; aged 81; died, June 8, in Pasadena, of acute nephritis and myocarditis.

Lewis M. Scott, Jellico, Tenn.; University of Louisville (Ky.) School of Medicine, 1885; member of the Tennessee State Medical Association; past president of the Campbell County Medical Society; aged 71; died, July 19.

John Hendry Reid ☉ Troy, N. Y.; Albany Medical College, 1904; past president of the Rensselaer County Medical Society; on the staff of the Troy Hospital; aged 52; died suddenly, July 26, of coronary thrombosis.

Freeman Shipton Hoover, Brownsville, Pa.; Baltimore Medical College, 1903; member of the Medical Society of the State of Pennsylvania; aged 65; died, July 14, in the Uniontown (Pa.) Hospital, of septicemia.

Paul Sanger ☉ Drumright, Okla.; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1899; past president of the Creek County Medical Society; aged 59; died, July 25, of angina pectoris.

Bradford Woodbridge ☉ Roseville, Calif.; Cooper Medical College, San Francisco, 1883; past president of the Placer County Medical Society; aged 69; died, August 17, of diabetes mellitus and coronary disease.

William Rush Gardner ☉ Hillsville, Va.; Medical College of Virginia, Richmond, 1922; served during the World War; aged 40; died, July 11, in the Mount Regis Sanatorium, Salem, of pulmonary tuberculosis.

J. A. Clark, Morrison, Tenn.; University of the South Medical Department, Sewanee, 1900; aged 61; died, July 25, in a hospital at McMinnville, of wounds received when he was shot by robbers.

Joseph John Larkin, Jersey City, N. J.; George Washington University School of Medicine, Washington, D. C., 1926; member of the Medical Society of New Jersey; aged 34; died, July 22.

Benjamin L. Culley, Oxford, Miss.; University of Louisville (Ky.) School of Medicine, 1878; member of the Mississippi State Medical Association; aged 80; died, July 19, of heart disease.

Christian Peter Nelson ☉ Owatonna, Minn.; University of Michigan Medical School, Ann Arbor, 1896; fellow of the American College of Surgeons; aged 64; died, July 14, of heart disease.

Robert C. Chalmers ☉ Woburn, Mass.; Boston University School of Medicine, 1887; on the staff of the Charles Choate Memorial Hospital; aged 71; died, July 22, of cerebral hemorrhage.

Donald H. Dean, Rushville, Ind.; Chicago Homeopathic Medical College, 1889; member of the Indiana State Medical Association; aged 72; died, July 25, of carcinoma of the liver.

Samuel A. Shawecker, Dover, Ohio; College of Physicians and Surgeons, Baltimore, 1893; formerly bank president; aged 70; died, July 12, of carcinoma of the liver and uremia.

William Luther Pawling, Vernal, Utah; University of Pennsylvania School of Medicine, Philadelphia, 1928; member of the Utah State Medical Association; aged 34; died, May 30.

Heinrich M. Schugt, El Paso, Texas (licensed, Texas, under the Act of 1907); aged 74; died, July 13, in the Providence Hospital, of heat prostration and edema of the lungs.

David Goldthwait Coolidge, Athol, Mass.; University of Michigan Medical School, Ann Arbor, 1889; served during the World War; aged 68; died, July 16, of cerebral hemorrhage.

Freeland David Leslie, Milton, Mass.; Boston University School of Medicine, 1879; formerly member of the board of health and school board of Milton; aged 74; died, June 28.

Franklin B. Witmer ☉ Lebanon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1891; on the staff of the Good Samaritan Hospital; aged 66; died, July 7.

James Dilley Thompson, Granville, Ohio; Jefferson Medical College of Philadelphia, 1878; aged 80; died, July 21, of multiple neuritis and hypertrophic cirrhosis of the liver.

Charles E. H. Armbruster, Denver; Denver Homeopathic College, 1901; aged 65; died, July 22, in the Porter Sanitarium and Hospital, following an operation for appendicitis.

Alfred H. Mellersh, Lenox, Ohio; St. Louis Medical College, 1875; Bellevue Hospital Medical College, New York, 1877; aged 85; died, July 2, of cerebral hemorrhage.

William Patrick Lipscomb, Muskogee, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1911; served during the World War; aged 46; died, July 23.

John Levi Butin, Madera, Calif.; Northwestern Medical College, St. Joseph, 1882; formerly bank president; aged 82; died, July 14, of chronic nephritis and uremia.

Louis Allison Murdock, St. Joseph, La.; University of Louisiana Medical Department, New Orleans, 1883; for many years parish coroner; aged 73; died, June 5.

William G. Kinsolving, Princeton, Ky.; Kentucky School of Medicine, Louisville, 1884; member of the Kentucky State Medical Association; aged 76; died, July 27.

Whitmell Pugh Small, Washington, N. C.; University of the City of New York Medical Department, 1877; aged 82; died, July 24, of carcinoma of the prostate.

Henderson Brooke Deady, New Milford, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; died, May 28.

Raphael B. Green ☉ Chicago; Chicago Medical School, 1918; aged 50; on the staff of the West Side Hospital, where he died, July 25, of coronary thrombosis.

Fred Loren Dixon, Lewiston, Maine; Dartmouth Medical School, Hanover, N. H., 1881; aged 76; died, July 7, of chronic interstitial nephritis and arteriosclerosis.

Billie Varner Ellis, Houston, Texas; Louisville (Ky.) Medical College, 1894; member of the State Medical Association of Texas; aged 61; died, July 12.

Herman Schaper ☉ Tudor, Alta., Canada; Rush Medical College, Chicago, 1892; member of the State Medical Society of Wisconsin; aged 68; died, July 14.

Rowland Beatty Orr, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1877; L.S.A., London, England, 1878; aged 81; died, May 28.

Melville B. Smith, Ottumwa, Iowa; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1895; aged 64; died, July 15, in a local hospital.

Harry Y. Spence ☉ Eugene, Ore.; University of Texas School of Medicine, Galveston, 1897; aged 63; died suddenly, May 28, of cerebral hemorrhage.

Richard Henry Harrison, Bryan, Texas; University of Nashville (Tenn.) Medical Department, 1896; aged 64; was drowned, July 15, when bathing.

Daniel Holland Ogden, Odum, Ga.; Southern Medical College, Atlanta, 1895; member of the Medical Association of Georgia; aged 65; died, May 1.

William Netter, Milwaukee; Rush Medical College, Chicago, 1877; aged 79; died, July 20, in the Evangelical Deaconess Hospital, of myocarditis.

Isabel Presbrey Brier ☉ Olive View, Calif.; University of California Medical School, San Francisco, 1926; aged 33; hanged herself, July 8.

August S. Keim, Nashville, Tenn.; Memphis Hospital Medical College, 1904; aged 61; died, July 17, of a self-inflicted bullet wound.

Alonzo B. Mendenhall, Cicero, Ind.; Cincinnati College of Medicine and Surgery, 1865; aged 89; died, July 22, of cerebral hemorrhage.

Milton J. Hopkins ☉ St. Louis; Missouri Medical College, St. Louis, 1896; aged 73; died, July 15, in the Barnes Hospital, of diabetes mellitus.

Thomas J. Selman, Blakesburg, Iowa; College of Physicians and Surgeons, Keokuk, 1878; aged 79; died, July 16, of diabetes mellitus.

Charles E. Protzman, Lincoln, Neb.; Lincoln Medical College of Cotner University, 1902; aged 51; died, July 8, of appendicitis.

John James Howell, Kilmichael, Miss.; Memphis (Tenn.) Hospital Medical College, 1906; aged 57; died, July 23, of heart disease.

Robert Goodman ☉ Benton, Pa.; Medico-Chirurgical College of Philadelphia, 1911; aged 46; died, July 19, of a cerebral hemorrhage.

William D. Ruhl, Fort Wayne, Ind.; Medical College of Fort Wayne, Ind., 1878; aged 77; died, July 14, of myocarditis.

Louis Simon Poskanzer ☉ Albany, N. Y.; Albany Medical College, 1923; aged 33; died, July 10, of heart disease.

W. W. Gore, Embury, Miss. (licensed, Mississippi, 1882); aged 78; died, July 13, of cerebral hemorrhage.

Bureau of Investigation

EMILE CARPENTIER

A Fraudulent Consumption Cure Debarred from the Mails

Emile Carpentier of Hillsdale, N. J., a native of France but a naturalized American citizen, was engaged in the sale through the mails of a preparation alleged to have been discovered by himself and sold under the claim that it would cure all forms of tuberculosis, as well as ulcers of the stomach, duodenum and intestines. Carpentier used to advertise in periodicals published in the vicinity of sanatoriums devoted to the treatment of tuberculosis. More recently, he has restricted the scope of his advertising—but not the claims made therein. A typical advertisement of Carpentier's read as follows:

TUBERCULOSIS

is easy to cure since 1927, by taking DR.
EMILE CARPENTIER'S COMPOUND
OF ORIENTAL HERBS AND NATURO-
PATHIC Treatment
and saves the vic-
tim in all countries
from seeing them.
to and revolution-
izes cures and treat-

ments.
I am proud of my past beneficial results.
Secret formula and Registered Patent rights
for sale by discoverer.

EMILE CARPENTIER, N. D.
68 Chestnut St.
Hillsdale Bergen Co. New Jersey

Those that answered Carpentier's advertisements received a letter from him in which he claimed that he could not specify any fixed time in which he could produce a cure, but that he had "cured hasty consumption in seven weeks." In other circulars Carpentier claimed that his "Compound" dissolved the wall [waxy envelope?] surrounding the tubercle bacillus "the same as boiling water dissolves sugar." Among other statements made by Carpentier in material he sent out were:

"I will not high hat T.B. victims—CARPENTIER'S T.B. COMPOUND will cure them gently and quickly."

"Many of these M.D.'s have heads as dense and hard as solid ivory; they cannot cure Tuberculosis but they act like the humble animal upon whose back Christ entered Jerusalem."

In March, 1933, Carpentier was furnished with a copy of the charges on file in the office of the Solicitor of the Post Office Department and was called upon to show cause on April 17 why a fraud order should not be issued against him. While Carpentier lives in Hillsdale, N. J., he was wintering at Miami, Fla., and service of the memorandum of the charges was had at that place. Judge Donnelly, Solicitor for the Post Office Department, in his memorandum to the Postmaster General recommending the issuance of a fraud order, stated that Carpentier's preparation, described as his "Compound of Oriental Herbs," was a greasy, ill-smelling paste that came in small jars of about two-ounce capacity. The stuff was to be taken internally, a level teaspoonful on arising and another one on retiring. The government chemists reported that analysis showed it to be composed, essentially, of animal fat, or grease, with honey and a small amount of gentian root. It was prepared by Carpentier with the assistance of his wife in their kitchen, using ordinary pots and pans and an egg-beater for mixing.

The government showed by expert medical evidence that the preparation sold by Carpentier would not and could not cure any form of tuberculosis, or even ameliorate the symptoms of that disease; that it had no power to kill the tubercle bacillus, to dissolve the waxy envelope around the bacillus, promote the growth of new cells, to arrest hemorrhages, etc. It was also brought out in the government's case that because of the necessity for rational and scientific treatment in cases of tuberculosis, the use of Carpentier's preparation, with attendant failure to secure proper treatment, might well result in loss by the sufferer of his last chance of life. To aggravate the situation, Carpentier advised his victims that cure of the tuberculosis might be

effected with the patient "up, out of bed" and "free from all restrictions."

Carpentier furnished the postal authorities with the names and addresses of a number of persons alleged to have been benefited by the use of his preparation. Investigation of the cases failed to disclose a single instance in which a cure of tuberculosis was established. Although Carpentier is not a physician, he used the title "Dr." before his name and "N. D." after his name. He advised the government that the use of the initials "N.D." after his name was based on a "certificate of membership" purchased by him in June, 1932, from the "American Naturopathic Association," for which he paid \$15. He took no course of study to secure this "certificate." The fact was also brought out at the hearing that in October, 1929, Carpentier was convicted of violating the Medical Practice Act of New Jersey and was fined \$200. In fact, this record was published in the "New Jersey Medical News" of THE JOURNAL for November 23, 1929.

Carpentier insisted that his motives in selling his preparation were purely humanitarian and "not for the purpose of making money." It was shown that the jar of his stuff that he sold for \$7 cost him about 50 cents. Following Judge Donnelly's recommendation that a fraud order be issued, the Postmaster General on April 25, 1933, closed the mails to Emile Carpentier, N.D.

Correspondence

MENINGOCOCCUS MENINGITIS IN EARLY INFANCY

To the Editor:—In THE JOURNAL, July 22, page 272, appeared an interesting article by Drs. Alan Brown and Nelles Silverthorne, in which they report a case of meningococcal meningitis in a 22 day old infant. The diagnosis was correctly made within twenty-four hours and, with the institution of early treatment, a complete recovery was made within fifteen days. In their introductory remarks the authors say that "very few cases reported in the literature at this age have been found" and also that "the youngest patient in whom the condition has been reported is the present one." Although the first statement is in accord with the opinion of all those who have written on the subject, the second one lacks in exactness. In making a review of the literature for a paper on "Meningitis in the New-Born and in Early Infancy," now in preparation, I came across a few cases of meningococcal meningitis in infants who were even younger than the one reported by the authors. Thus, D. J. M. Miller (A Case of Meningococcus Meningitis in the New-Born, with Interesting and Unusual Features, *Arch. Pediat.* 34:824 [Nov.] 1917) reported a case in a 2 weeks old infant. Meningitis was heralded by a purulent conjunctivitis, which, because of the finding of gram-negative diplococci in the smear, was at first thought to be gonococcal in origin. The patient died nineteen days later of meningococcal meningitis. Henry Koplik in "Meningitis in New-Born and Infants Under Three Months of Age" (*Arch. Pediat.* 33:481 [July] 1916) tells of a case of meningococcal meningitis in a new-born infant. The temperature had been elevated since birth and the first signs of meningitis developed on the ninth day. This infant subsequently developed hydrocephalus, which, however, soon came to a standstill, the patient having survived this complication. Dora Karplus (Die Meningitis des Neugeborenen, *Wien. klin. Wchschr.* 40:250 [Feb.] 1927) also cites among her cases one of meningococcal meningitis in an infant, aged 10 days. There were few symptoms and the child died twenty-four hours later in spite of treatment.

No attempt is made here to cite all the cases of meningococcal meningitis in infants younger than 3 weeks. I have only mentioned these cases to show that a more thorough review of the literature will prove that the authors' patient is not the youngest on record. However, the present case reported

by Drs. Brown and Silverthorne is an interesting one for two special reasons: the early diagnosis and the good recovery, the reverse of these two facts being rather more common in the majority of cases reported in the literature.

J. M. RAVID, M.D., New York.

ALLERGY TO ACETYSALICYLIC ACID

To the Editor:—Referring to the clinical note on death following the administration of 5 grains of acetylsalicylic acid to an allergic patient, by B. R. Dysart (THE JOURNAL, August 5), I feel constrained to voice an opinion.

In the first place, acetylsalicylic acid is a widely used drug and before death can be attributed to its use it appears to me that evidence for such a deduction should be more certain. This asthmatic patient, 45 years of age, had taken aspirin and then began to wheeze. She then gave herself an injection of epinephrine, the dose not stated. The physician was called because the condition became worse and death followed in ten minutes. Autopsy revealed a normal heart, some tenacious mucus in the bronchi and a sarcoma of the dura "about the size of an English walnut" located over the left cerebral hemisphere. Dr. Dysart's comment is that allergic patients should be cautioned about the harmful possibilities of any drug and that they should be advised to try any new drug in very small amounts.

One cannot help but agree with this comment, but there is a serious objection to attributing the death in this case to acetylsalicylic acid in view of the unknown quantity of epinephrine which the patient administered to herself, and the presence of a brain tumor. Unless more conclusive evidence can be produced, it seems to me rather that emphasis should be laid on the hazard involved in the free use of epinephrine and drugs such as morphine by the allergic patient, more particularly when the patient injects such drugs himself.

BRET RATNER, M.D., New York.

JOHN HUNTER ON VENEREAL DISEASE

To the Editor:—At this time, when so much recognition is being given to specificity and selective localization of bacteria, it is of interest to know that John Hunter in 1786 had this to say in "A Treatise on the Venereal Disease":

There are some parts much more susceptible of specific disease than others. Poisons take their different seats in the body as if allotted for them. Thus we have the skin attacked with what are vulgarly called scorbutic eruptions, and many other diseases; it is also the seat of the small-pox and the measles; the throat is the seat of the hydrophobia and the whooping-cough. The scrofula attacks the absorbent system, especially the glands. The breasts, testicles, and the conglomerate glands are the seat of cancer. The skin, throat, and nose, are more readily affected by the lues venerea than the bones and periosteum, which, on the other hand, suffer sooner than many other parts, particularly the vital parts, which perhaps are not at all susceptible of the disease.

P. I. NIXON, M.D., San Antonio, Texas.

ATOPY TO ACACIA

To the Editor:—I have read with interest the report of the case "Atopy to Acacia (Gum Arabic)" by Drs. Aaron D. Spielman and Horace S. Baldwin (THE JOURNAL, August 5, p. 444). It seems that some clinicians speak of allergy and atopy in interchangeable terms. Arthur F. Coca in his volume on "Asthma and Hay Fever in Theory and Practice" (Baltimore, Charles C. Thomas, 1931) defines atopy as a "form of human hypersensitiveness which does not occur, so far as known, in the lower animals, but which is subject to hereditary influence." This suggestion, however, does not detract from the splendid contribution of this report.

LEON FELDERMAN, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DIETS FOR OVERWEIGHT GIRLS

To the Editor:—Two girls, cousins, both 10½ years old, came together to me for treatment of obesity. A weighs 80 pounds (36 Kg.) and is 51 inches (129.5 cm.) tall. She weighed 6 pounds (2,720 Gm.) at birth and developed as a short child but with an average amount of fat. Following an attack of tonsillitis, one year ago, she proceeded to become visibly obese quite rapidly. Her appetite is moderate and her habits and exercise are average. Her father is a very short, obese man. On examination she disclosed moderate obesity, generalized in distribution, the flesh being firm in character. The basal metabolic rate is minus 9 per cent; urine and blood count are normal. B weighs 126 pounds (56.7 Kg.) and is 58 inches (147 cm.) tall. She weighed 10 pounds (4.5 Kg.) at birth and was always a tall, plump child. As far as she can remember, her appetite has always been poor and her exercise considerably less than average. On examination she showed considerable obesity, generalized in character, but especially marked in the hips and thighs. Her flesh is quite flabby. The basal metabolism is normal, and the urinalysis and blood count are negative. I should greatly appreciate suggestions as to treatment. Please omit name.

M.D., New York.

ANSWER.—There is nothing in the description of these two cases which can be taken to indicate anything more than an alimentary obesity. The fact that these two girls are cousins and that the father of A is a short, obese man may mean only that the feeding habits of the family tend to be excessive. Assuming that no definite endocrine disturbance is present, these children can be treated for obesity by dietary reduction alone. An important though elementary consideration to be kept constantly in mind throughout the treatment is that its success depends almost wholly on the degree to which the diet prescribed is actually followed by the patients. Any increase in muscular activity which the children can be induced to make—and this is most apt to be successful when introduced in the form of play—will of course aid in the treatment.

The following diets, which are suggested, are calculated on the caloric requirements for maintenance and growth for these children, based on their ideal rather than actual body weights. The calories required for activity will thus be drawn chiefly from stored fat. For this reason the carbohydrate allowance in the diet is high, in order to avoid acidosis. The fat allowance in the diet is almost as low as is compatible with palatability, and the protein is high (2.5 Gm. per kilogram) in order not to interfere with growth. Care should be taken that the source of protein is good and because of the low fat content of the diet the fat-soluble vitamins may have to be added in concentrated form.

A. Ideal weight, 28 Kg. (Baldwin-Wood tables).

Caloric requirement exclusive of activity = 1,484 calories (Holt and Fales).

	Grams	Calories
Protein	70	280
Fat	52	468
Carbohydrate	184	736
		1,484

B. Ideal weight, 38.5 Kg. (Baldwin-Wood tables).

Caloric requirement exclusive of activity = 1,891 calories (Holt and Fales).

	Grams	Calories
Protein	96	384
Fat	63	567
Carbohydrate	235	940
		1,891

The tables on which these diets are based are available in "Nutrition and Diet in Health and Disease" by McLester.

CALCIUM AND VIOSTEROL IN HYPERTENSION

To the Editor:—To combat the arteriolar spasm in hypertension, it has occurred to me that calcium and viosterol might be of some value. On the other hand, I have thought there might be danger of calcification (more or less) of the arteries. Kindly advise whether, in your opinion, medication as suggested would be imprudent. Please omit name.

M.D., Alabama.

ANSWER.—That some relationship between arteriolar hypertonicity and diminished blood calcium content and parathyroid deficiency exists was first suggested by Engelbach (THE JOURNAL, June 12, 1920, p. 1619). The investigations of Kylin (Kylin, E.: *Klin. Wchnschr.* 4:806 [April 23] 1925. Kylin, E., and Myhrman, G., *ibid.* 4:1870 [Sept. 24] 1925; *Deutsches*

Arch. f. klin. Med. 149:354 [Dec.] 1925. Kylin, E.: Die Hypertoniekrankheiten, Berlin, Julius Springer, 1930) and others indicate that a relatively minor hypocalcemia is frequent in hypertensive arterial disease. Such relationship, if of etiologic significance, should be most conspicuously manifest during pregnancy because of the notable depletion of the maternal calcium supply. That such a physiologic relation between the arterial tension and the blood calcium content exists in pregnancy was demonstrated by Stieglitz (Stieglitz, E. J.: *Arch. Int. Med.* 39:465 [April] 1927), but this relationship is probably not of significance in causing pathologic elevation of the arterial tension. Parathyroid therapy, which increases the blood calcium content notably, does not cause appreciable reduction of the arterial tension (Major, R. H., and Buikstra, C. R.: *Bull. Johns Hopkins Hosp.* 37:392 [Dec.] 1925). The clinical studies of Davis (*THE JOURNAL*, Oct. 31, 1931, p. 1295) with large, long continued doses of calcium lactate in hypertensive disease yielded disappointing therapeutic results.

The effects of viosterol on the arteriolar spasm in hypertensive arterial disease are unknown. Although there are experimental data which indicate that excessive doses of viosterol contribute to sclerotic changes in the larger arteries and more exceptionally to the smaller renal arteries in rabbits, no clinical reports of such medication are available. Certainly arteriosclerosis, with or without calcification, involving the larger arteries is an entirely separate disease entity from hypertensive disease; extensive arteriosclerosis may, and frequently does, exist without abnormal elevation of the arterial tension. Such arteriosclerosis with fatty changes and later calcium deposition is a disturbance of the intima of the larger arteries, whereas the site of the disease in hypertension is the media of the arterioles (Stieglitz, E. J.: *Arterial Hypertension*, New York, Paul P. Hoeber, Inc., 1930, p. 50). The two disturbances may coexist, especially in elderly patients; in such instances, liberal doses of viosterol would be theoretically unwise.

The combined administration of calcium and viosterol in moderate amounts to younger patients with hypertensive arterial disease is worthy of clinical trial and would not be considered imprudent. It is most questionable whether much direct benefit to the arteriolar spasm could be anticipated. Perhaps hypertension coincident with pregnancy offers the most promising type of case for such management.

EFFECTS OF OVARIAN TRANSPLANTS

To the Editor:—I should like to have your opinion as to the results of transplantation of ovaries. I have a patient who a few years ago had one ovary and most of the other one removed. She is now suffering greatly from endocrine imbalance and has been advised, when ovarian tissue from another person suitable in every way may be found, to have a transplanting done. What is the opinion of other men as to the value of this procedure? I should appreciate an early reply. Please omit name. M.D., Pennsylvania.

ANSWER:—The situation in regard to ovarian transplantation in animals below man seems clear. In the hands of competent investigators, ovarian transplants into the wall of the uterus, under the skin or attached to the abdominal wall yield a 20 to 40 per cent take in rats, guinea-pigs, dogs and monkeys, if the transplant is perfectly fresh and the recipient is in normal health. A few minutes' asphyxia of the transplant appears to vitiate the take of the graft. Such grafts become vascularized and function for at least some months in the sense that they continue to produce the hormones peculiar to the ovaries. This appears to be true whether the graft of the ovary is made from one part of the body to another in the same individual or the graft is made from one individual to another of the same species. The life span of the successful graft appears in every case to be shorter than that of the normal ovary in situ of the species concerned. Successful ovarian grafting from one species to another has never been conclusively demonstrated.

In regard to the ovarian graft in women, the results appear to be much more conflicting and uncertain; in fact, so uncertain that ovarian grafts as a therapy for the artificial or normal menopause symptoms has been extremely disappointing. There may be many reasons for this uncertainty and general unsatisfactory results of ovarian transplants in women, among them the difficulty of obtaining perfectly normal ovaries for the graft. Many of the grafting experiments in women have been made with ovaries already diseased. A second difficulty is the brief span of viability of the ovary after the circulation is stopped. If ideal conditions could be obtained in the clinic like that in the laboratory, i. e., a healthy female donor of the graft under anesthesia side by side with the recipient so that transfer of the graft would involve a minimum of time and interruption of ovarian circulation, the percentage of success would undoubtedly be greater than indicated by the present literature; but it must be remembered that even under these ideal conditions

successful takes of grafts practically never reach even 50 per cent, and the survival of the graft appears to be only a matter of a few months. It should also be noted that in the relatively successful animal experiments the whole ovary is usually not grafted. It is sliced and grafted in pieces, thus favoring circulatory exchange and therefore the life of the graft through diffusion until vascularization occurs.

The statement that "endocrine imbalance" resulted from complete castration of the patient is somewhat mystifying. Some of the hormones from the ovaries are known to have influence on the hypophysis or pituitary gland, but total castration does not reveal detectable symptoms in the line of hypofunction of the hypophysis, at least not to the degree that would justify the name of disease. One would therefore be inclined to believe that the "endocrine imbalance" in the patient is not primarily related to the partial castration, and if this is the case, improvement of the patient even from a successful ovarian transplant would seem even more problematic.

BURNING OF THE TONGUE AND NITRITOID CRISIS

To the Editor:—A man, aged 55, has been under my care for treatment for a syphilitic gumma of the tongue for about two months. Twelve injections of neoarsphenamine, also mercury and potassium iodide treatment, have failed to promote any healing. Since treatment was begun, the patient has noticed an increase of soreness in the tongue and a severe burning of the lips, which he says is nearly impossible to endure and which drives him frantic at times. I have tried several preparations to ease the burning of the lips, but nothing seems of any benefit. Can you tell the cause of the severe burning of the lips and is there anything you could suggest for this man, who certainly is in misery? Since anti-syphilitic treatment seems to intensify the burning and does not promote healing, what steps should I follow? Examination of the urine is negative. Please omit name. M.D., Montana.

ANSWER:—Twelve injections of neoarsphenamine and treatment with mercury and potassium iodide, assuming that they are given in adequate doses, should produce an evident effect on a gumma of the tongue. The failure of such treatment to do so raises the question of diagnosis. The patient may have a positive Wassermann reaction and still have some other trouble of the tongue. Of course, the first thing one thinks of in a man of his age is carcinoma, and an attempt to exclude or confirm that diagnosis should be made as early as possible. The extreme burning of his lips may be due to the effects of arsphenamine. Shamberg and Wright, in discussing nitritoid reactions, say that "not infrequently, a burning of the lips and tongue is experienced." It is possible that the administration by mouth of sodium thiosulphate may be a comfort: a teaspoonful three or four times a day of a solution of sodium thiosulphate, 30 Gm., and water to make 120 cc., to be taken in a glass of water. Bland applications should be tried; Dobell's solution would probably be as comfortable as anything.

SENSITIVITY TO HORSE SERUM OR HORSE DANDER

To the Editor:—A man, aged 62, appearing much younger than this, in reasonably good health, developed a severe and prolonged urticaria, fifteen years ago, following a series of injections of antistreptococcus serum. He has had this a great deal of the time since, in a somewhat modified form—an abruptly appearing erythema with intense itching. He has consulted many men and has had a great variety of treatment. Epinephrine gives but slight relief, if any. He has been given calcium gluconate largely. The other treatments probably are not worth mentioning. His basal metabolic rate is minus 10. While the horse serum apparently originated this condition, it does not seem reasonable to suppose that he is still encountering this material in any way. Rather peculiarly, he has not had any particular tests to see what substances he may be sensitive to. I think I shall start these at once. But he has been through so many hands that the outlook does not seem encouraging either to him or to me. Consequently I should like to get any help in the matter that can be had. ORVILLE ROCKWELL, M.D., Boulder, Colo.

ANSWER:—Two possibilities seem to be present here: first, that the injections of antistreptococcus serum, probably derived from horses, sensitized the patient to horse serum. It is well known that most individuals who are sensitive to horse serum are also sensitive to horse dander. Coca (Asthma and Hay Fever in Theory and Practice, 1931, p. 380) is "not aware of any authentic instances of atopic sensitivity to horse serum which, at the same time, did not show some cutaneous reactivity to horse dander as well. The reverse relationship holds true less frequently."

It would thus appear that the patient may well be sensitive to horse dander and that his attacks of urticaria may be due to contact with horse hair and dander. Search for such contact should be made and, if present, should be eliminated at once and as completely as is possible. Horse hair is not only a matter of horses and stables but is also found in pillows,

mattresses, upholstery, automobile cushions, blankets, padding in clothing, crinolin, the lining of shoes, making gloves, sieve bottoms, press cloths, sacks and bags. Contact with horse manure may also cause symptoms in susceptible individuals. Horse hair pillows and mattresses are especially important factors and should be removed or covered with light rubber sheeting.

The patient should be skin tested for horse serum and horse dander. Desensitization by injections of horse dander extract should also be given if a positive reaction is obtained, because it is impossible to avoid horse dander completely.

A second possibility is that the urticaria has nothing whatever to do with the injection of antistreptococcus serum. In this case the usual procedure is to test the skin of the patient thoroughly with all foods and epidermals; to try eliminating diets if no clues are obtained by skin testing; and, if these fail, to try nonspecific measures, such as injections of foreign proteins, of vaccines, of blood from the patient (autohemotherapy), and ingestion of calcium compounds, thyroid, acids, peptone and vitamins. It must be said, however, that these nonspecific measures fail for the most part and that when they do succeed the good results are all too frequently temporary.

CARRENE OR DICHLOROMETHANE

To the Editor:—A new household refrigerator is said to make use of the refrigerant "Carrene." This substance is believed to be dichloromethane. To what extent is carrene toxic, and, if toxic, are its manifestations similar to those produced by other chlorinated hydrocarbons, such as carbon tetrachloride?

M.D., Ohio.

ANSWER.—In a paper entitled "Dichloromethane and Dichloroethylene as Refrigerants" (*J. Indust. & Engin. Chem.* 24:616 [June] 1932), R. W. Waterfall of the Carrier Engineering Corporation of Newark, N. J., mentions "Carrene" as a synonym for dichloromethane. Dichloromethane is also known as methylene chloride. *Chemical Abstracts* (25:155, 1931), under the title of "Use of Methylene Chloride as a Refrigerant," records the issuance of U. S. patent 1781051 to Willis H. Carrier and its assignment to the Carrier Engineering Corporation.

According to the report of the Committee on Poisonous Gases of the American Medical Association (*THE JOURNAL*, June 7, 1930, p. 1832), dichloromethane is one of the substances that may be used as a refrigerating medium.

An article on the use of methylene chloride as an analgesic and narcotic was published in the *Klinische Wochenschrift*, 1922, page 215.

The *Prescriber* (Edinburgh), 1923, page 319, describes the use of methylene chloride as an anesthetic and calls attention to the fact that it has been used in Germany under the proprietary name Solaesthin. References to the early use (1867) of the substance are also given in this paper.

A paper comparing the narcotizing toxic effects of some halogen hydrocarbons, among them methylene chloride, appeared in the *Archiv für experimentelle Pathologie und Pharmakologie* 109:276, 1925. This paper was abstracted in *Chemical Abstracts* 20:455, 1926.

CONJUNCTIVITIS FROM SWIMMING POOLS

To the Editor:—People develop eye irritations, such as congestive conjunctivitis and transitory epithelial keratitis, in certain swimming pools but not in others. Leaving the hypotonicity of water and individual susceptibility out of the question, only one problem remains to be explained: the action of chlorine. Clinically, chlorine produces rather an active hyperemic conjunctivitis with much lacrimation and light red arterial swelling of the conjunctiva. Swimming pool water, on the other hand, causes more of a lymphatic stimulation with bluish red swelling of the conjunctiva, which is almost an edema and similar to the chemosis of acid or alkali "chemical conjunctivitis." The symptoms are stickiness, sensation of "soap in the eyes," no secretion and hardly any lacrimation.

PAUL CARANOWITZ, M.D., Reading, Pa.

ANSWER.—The question does not state specifically whether the conjunctival irritation in question is of the mild transitory type, such as is commonly found after contact with any chemical or mechanical irritation, or whether the conjunctiva presents the clinical picture now well known as "swimming pool conjunctivitis." If the latter form is meant (acute hypertrophic conjunctivitis with some follicle formation and preauricular adenopathy, appearing from ten to twenty days after exposure) an infectious process is concerned. In this type of case, the Provaczek inclusion bodies have been found by various investigators in as high as 85 per cent of the cases and it is believed by many that the infectious process is of genital origin. On the other hand, if the milder form of conjunctival irritation is meant, that can be accounted for in the majority of cases by the hypotonicity or, in the case of sea bathing, hypertonicity of the water. Idiosyncrasy undoubtedly

plays a part. Again, many swimmers are continuously under the surface of the water with the eyelids open constantly, others with the eyes shut, while others keep their head above water. So it is not probable that the acidity or alkalinity of the water plays the major part in the production of the conjunctival irritation.

VISIBLE SCAR ON FACE

To the Editor:—A boy, about 14 years old, was injured by an automobile. He suffered numerous bruises and slight lacerations. The accident happened, February 15. On the left side of his nose, at the time of the accident, there was an abrasion or brush burn. It is now healed with a remaining redness, but at the site of the scar there is a line about one-fourth to one-fifth inch long exactly like a pencil mark, which of course does not come off. The entire scar is the size of a penny. What is this black line and what is the possibility of its disappearing? The abrasion at the time of the accident was treated with 2 per cent mercurochrome. This case is an insurance case and probably will result in a suit, and I am at a loss to know what this black line may be. Could it be dirt that was not removed at the time of the accident? It seems just exactly like a pencil mark and the tendency when one first sees it is to wipe it off. I hope that with such information, meager as it is, you may be able to help me. Please omit name.

M.D., New York.

ANSWER.—The injury to the nose apparently was associated with the grinding in of foreign material from some object striking it. Blood and serum with the mercurochrome probably helped to prevent its discovery at the time.

The dark material is quite likely composed of some insoluble material, such as particles of steel, carbon or paint, which makes it unlikely that it will be absorbed from the skin.

Since this black line will in all probability remain, it should be excised and the edges of the skin undercut and sutured. Healing should occur with no visible scarring. The surgical work should be done by one having some knowledge of plastic surgery.

Careful inspection at the time of the accident will usually permit one to find such foreign material and remove it by excision of the tissues with immediate repair and good results.

USE OF THYROID IN CRETINISM

To the Editor:—I have under my care a boy, aged 6 years, who shortly after birth demonstrated signs of mild cretinism. He had the characteristic deep voice and the coarse hair and in addition retardation in mental development. During his second and third years, he was given small doses of desiccated thyroid. The patient is an extremely active and playful youngster; he seems to understand practically everything when spoken to but still he is mentally deficient. I have placed him on thyroid medication, 1 grain (0.065 Gm.) three times a day. Please let me know whether or not this dosage is a correct one. He has demonstrated no toxic signs since he has been taking thyroid. What is the prognosis in such cases? Kindly omit name.

M.D., New Jersey.

ANSWER.—The case as outlined is undoubtedly cretinism with feeble-mindedness. The prognosis is poor. There will be practically no improvement mentally. The type of thyroid used is not stated. Three grains (0.2 Gm.) daily of thyroid extract, standardized by the U. S. P. method, would be too much for a 6 year old; yet, if he tolerates it, it is evidently not too much. Theoretically 2 grains (0.13 Gm.) daily would be the maximum amount tolerated by a 6 year old child, but he should have thyroid to tolerance.

SKIN DISEASE OF JEAN PAUL MARAT

To the Editor:—Numerous historical works referring to Jean Paul Marat, Swiss physician, publicist and French revolutionary, tell how his native cynicism was aggravated in the later years of his life by an intolerable skin disease. In view of the meager knowledge of dermatology extant in the latter part of the eighteenth century, a contemporary diagnosis, if attempted, would probably be unreliable. No author in my experience has presumed to name the ailment, nor have I seen a description sufficiently clear to allow a plausible diagnosis. Both *The Outline of History*, by Wells, and the *Encyclopedia Britannica* ascribe Marat's affliction to his habit of hiding in the sewers and cellars of Paris when the phase of his undulating fortunes was in the negative. Carlyle and Wells moreover imply that, at the moment of his assassination by Charlotte Corday, he was in a hot bath, to which it was his wont to repair to gain respite from the tortures of his ailment. These circumstances may afford a basis for speculation but I should like descriptive evidence, if any such exists, as to what the disorder really was.

PHILIP MARSHALL DALE, M.D., Granite City, Ill.

ANSWER.—In the fourth edition of his *Marat* inconnu, Dr. Augustin Cabanès has dedicated a chapter to Marat's ailments. He quotes Souberbielle, who was both the friend and the physician of the famous demagogue, to the effect that he suffered atrociously during his last five months from a dartre, which began about the scrotum and perineum, from which it spread over almost the entire body. It was accompanied by such severe pruritus that Marat was compelled toward the end to pass most of the time in the bath tub where Charlotte

Corday ended his career. The dartre of the older French dermatologists corresponds to what is now termed pityriasis simplex, which many consider to be of microbic origin. Marat had suffered severely from neurasthenia as far back as 1774, almost twenty years before his death. The privations which he endured in later years plus overwork and excessive indulgence in coffee all contributed to the prominence of his cutaneous symptoms.

RELATION BETWEEN EPILEPSY AND HEAD INJURIES

To the Editor:—Will you please answer the following questions concerning the relation between epilepsy and head injuries? 1. What percentage of epileptic patients give a history of severe head injury? 2. How soon after a head injury may epilepsy occur, and how many months or years after such an injury may be considered a safe period to disregard the possibility of the development of such symptoms? 3. What type of head injury, if any, would lead one to anticipate the subsequent development of epilepsy? 4. In the absence of any neurologic symptoms on physical examination following a traumatic brain lesion, is it justifiable to say that the patient is cured and will not develop epilepsy at some future time?

HENRY HAYWOOD, M.D., New Brunswick, N. J.

ANSWER.—1. Such history is frequently given but is often unreliable. Obviously, no reliable figures exist.

2. There may be convulsions at once or they may come on after months or years. The possibility can never be disregarded after severe head injury, especially if a neuropathic tendency or heredity exists.

3. Any head injury that was attended with loss of consciousness at the time or with a penetrating wound of the brain. Some believe that constitutional makeup is more important than type of injury.

4. Not without reservation.

ALLERGIC RHINITIS

To the Editor:—I have a child, aged 3, who, since 3 weeks of age, has had a recurrent mucopurulent and bloody nasal discharge. The mucous membrane is pale, purplish gray, edematous and swollen, so that there is constant contact between the turbinates and the septum on each side. Occasionally the child has had some transitory urticarial patches, which have disappeared within a few hours. Wassermann and blood sugar tests and other examinations are negative. A 1 per cent solution of ephedrine in physiologic solution of sodium chloride, applied locally, gives relief for from half an hour to three hours. Is this not more likely an inhalation than a gastro-intestinal allergy? Are there any clinics or groups of individuals whom you know who are giving this special study? The condition is annual and not seasonal. Kindly omit name.

M.D., New York.

ANSWER.—The diagnosis of an allergic rhinitis coupled with occasional attacks of rhinitis or rhinosinusitis as evidenced by the mucopurulent discharge seems in this instance to be quite clear. The bleeding is probably a simple epistaxis accompanying the colds. One cannot say definitely that this is an inhalation sensitivity. Many or most cases of this type are due to inhalation of some offending substance, but the gastro-intestinal route must be kept in mind. The diagnosis of the offending agents is often time consuming and frequently unavailing. In each part of the country are men who devote most or all of their time to the study of allergic diseases.

TULAREMIA

To the Editor:—A man, aged 46, came under my care after having been ill for one and one-half years. Five weeks ago the right inguinal glands became swollen. When I saw him, June 30, suppuration had appeared in the glands. He had a leukocyte count of 2,000. Blood examination at the Wisconsin State Laboratory of Hygiene revealed *Pasteurella tularensis*. I need more information to proceed with this case and would like to have answers to the following questions: 1. What is the course of tularemia? Would it be possible for my patient to have had tularemia for one and one-half years? 2. What treatment should I use? The man has little, if any, fever. Sodium iodide and guaiacol, intravenously, has been recommended to me. Is there any immune serum available? 3. What is the probable outcome in this case? For business reasons he would like to know.

R. L. MACCORMACK, M.D., Whitehall, Wis.

ANSWER.—1. Many cases of tularemia pursue a chronic course extending over many months. There are several cases on record in which suppurative lymphadenitis occurred later than one year after the onset of the infection.

2. There is no controlled evidence that the intravenous administration of chemotherapeutic agents such as sodium iodide, arsphenamine, mercurochrome, acriflavine or other dyes appreciably alters the course of the disease. Lee Foshay of the University of Cincinnati described the development of an apparently potent goat antiserum for the treatment of tularemia in *THE JOURNAL*, Feb. 13, 1932, page 552.

3. The prognosis for ultimate recovery in this type of case is usually favorable.

PARK TEST AND SCHICK TEST IN DIPHTHERIA

To the Editor:—Is the Park test still considered good practice as a substitute for the Schick test six months after the toxin-antitoxin injections? William H. Park of New York has for years recommended this test and claims that the additional injection of the toxin-antitoxin mixture not only shows the presence or absence of immunity to diphtheria but also provides additional immunity if it should be lacking. Please omit name.

M.D., Pennsylvania.

ANSWER.—Park found that in young children, especially those of preschool age, the reaction from the strictly subcutaneous but superficial injection of a properly standardized toxin-antitoxin mixture could be employed as a measure of immunity, and at the same time the injection would serve as the first of a series of immunizing injections. The reactions are read the sixth or seventh day. In young children the reactions parallel the Schick reactions. In older children there is an error of from 10 to 20 per cent toward the positive. Park did not recommend this procedure as a substitute for the Schick test but only as a means of avoiding an extra injection in public schools and baby health stations. He expressly says that "this test should not be substituted for the Schick test in a retest" (*Am. J. Pub. Health* 18:1455 [Dec.] 1928).

REMOVAL OF CORNS

To the Editor:—In the practice of orthopedics I have been reminded recently on two or three occasions of a chiropodist, name unknown, who used to have a large corn practice in this city. The story goes that he had some extremely potent local anesthetic combined with some chemical which loosened a corn in three or four minutes. He then gently elevated the cornified epithelium at the periphery of the corn with a scalpel and gently manipulated the whole business until it was completely removed. The last patient who described this procedure to me stated that the object removed had something the shape of a carpet tack. Have you any idea what this magic formula might be? Any city of ordinary size would provide a fortune for the man who possessed this secret, at a dollar a corn.

D. M. MEERISON, M.D., Vancouver, B. C.

ANSWER.—Various substances are used in chiropody, including alcohol, phenol, procaine hydrochloride and escharotics, including salicylates. Many chiropodists are dexterous and perform their minor operations in a tricky manner, the psychology of which is impressive on the patient. They use sharp instruments, cut rather than pull, and thereby cause little pain.

The probabilities are that the "magic formula" is 5 per cent aqueous solution of phenol, which is the best skin anesthetic that can be applied to the unbroken skin.

"SLEEPING SICKNESS"

To the Editor:—A man, aged 44, has been troubled for four years with sleeping sickness. He has lost considerable weight, shows marked salivation and all the nervous manifestations of the malady, and the blood examination is positive. At present he is so mentally deranged that he remembers nothing of past treatment except that he has had some "shots," which I assume to have been trypanamide. I will appreciate any suggestions you will offer as regards treatment. Please omit name.

M.D., West Virginia.

ANSWER.—There are too many assumptions in the description of this case to permit of any positive statement. It is not even clear what kind of sleeping sickness the writer of the question has in mind, since he speaks of a positive blood examination. To our knowledge African sleeping sickness (trypanosomiasis) is the only sleeping sickness with positive blood examination, and trypanamide is used for that disease. However, the questioner probably has in mind the parkinsonian form of epidemic encephalitis, for which scopolamine, stramonium and atropine are usually the best.

CALOMEL OINTMENT IN SYPHILIS—SUGAR IN INFANT DIET

To the Editor:—What is the general opinion at present as to the value of calomel ointment (N. F.) in the treatment of syphilis, especially in children? Would the preparation "Calomettes," which is a calomel in cacao butter, be of any greater value than the N. F. ointment? 2. A pediatrician of a neighboring town gives instructions that in children under his care the sweetening agent used for cereals and the like shall be brown sugar instead of the common granulated. Are there any grounds for assuming that brown sugar is "better" for growing children than white sugar? Is it possible that vitamins and valuable minerals have been found in brown sugar now? Please omit name.

M.D., New York.

ANSWER.—1. Calomel ointment (N. F.) is an excellent drug for use in children suffering with congenital syphilis, and its use as a rub in this condition is ancient and time honored. "Calomettes" are of no greater value than the N. F. ointment. Calomettes have not been accepted by the Council on Pharmacy and Chemistry.

2. Whatever sugar is used in the dietary of infants or children, it must eventually be absorbed as a monosaccharide, dextrose, levulose or galactose. It would seem that the choice of sugar is a simple preference of the individual pediatrician, whether it comes from beet, corn, milk, grape or cereal. Vitamins have not as yet been discovered in sugars.

SPONTANEOUS NOSEBLEED

To the Editor:—A review of cases of pulmonary tuberculosis occurring among something over 100 Negroes discloses the symptom of spontaneous nosebleed in three or four instances. I am wondering whether you can give me any information on the subject as to the frequency of its occurrence. I have seen nothing regarding the matter in such literature as I have at my disposal.

GROESBECK WALSH, M.D., Fairfield, Ala.

ANSWER.—The incidence of spontaneous nosebleed in the general population in the female sex is approximately that which occurred among these Negroes. There is nothing in the literature that points to special studies in epistaxis in any group. One should remember, however, that, in the tuberculous, bleeding from the respiratory tract may occur in the menstrual cycle and in some instances vicarious menstruation has occurred from the nasal mucosa in the tuberculous.

MACROSCOPIC TEST FOR UNDULANT FEVER

To the Editor:—Kindly recommend to me a reliable macroscopic test for undulant fever.

J. M. BODENHEIMER, M.D., Shreveport, La.

ANSWER.—Blood culture is the most satisfactory method of diagnosis of undulant fever in man when applied in the early stages of the disease. Agglutination is, however, widely used. Huddleson has given a full and clear description of a method of rapid macroscopic agglutination for the diagnosis of alcaligenes (brucella) infection in man and in farm animals (Technical Bulletin 123, Agricultural Experiment Station, Michigan State College, East Lansing, Mich., January, 1932). This method has received official approval in several states and is being used in many hospitals and laboratories in a routine examination of blood for alcaligenes infection.

TOXICITY OF "STERNO"

To the Editor:—I am writing you to ask whether you can furnish me with any information of Sterno canned heat. I need this information for evidence in a trial of a degenerate who raped a young girl and is now faking insanity. Since he has been coached by an attorney, his only recollection of anything is that this preparation gave him a violent erection and I imagine the defense is going to try to prove that as the result of some aphrodisiac in this preparation the prisoner was temporarily insane.

M.D., Texas.

ANSWER.—Sterno is a patented product "for use as fuel only," which is currently assumed to be a form of solidified alcohol. For further information write to Sterno Institute, 9 East Thirty-Seventh Street, New York.

CARITOL

To the Editor:—I wish to protest against certain animadversions on one of my articles which you make in your answer to "M.D., Ohio," in THE JOURNAL, August 5, page 465.

One of the criticisms in question runs, "The statement elsewhere in the article that Caritol had apparently desensitized to 'house-dust' allergy and had given a 'decided increase in her hearing power' to a patient is hardly scientific." But I did not say that the Caritol had "given" any increase in hearing power. I said merely that the patient had so "reported," my thought being (I am an oculist only) that otologists might care to test out the possible indication.

You also say, "In the three succeeding paragraphs the increase of visual acuity in patients is given and the author urges 'other oculists to try out caritol thoroughly,' remarking that 'whenever it does no good, it will do at least no harm.'" And you comment, "This may be true; but if it 'does no good' the patient loses time and money to gain the increased visual acuity which, today, operative procedure can certainly give."

In the first place, "certainly" is not correct. After cataract surgery fully 5 per cent of eyes are still sightless. This is not "certainly." (Cataract surgery, of course, is highly valuable notwithstanding.) But what I chiefly wish to protest against is the implication of your words that I had offered Caritol treatment for cataract in competition with surgery. I had done nothing of the sort. I had merely raised the question of whether or not Caritol might be of value in cases that are not yet ready for surgery—early cases. Once again, an immense difference.

It is worth mentioning that, by a strange coincidence, the same mail that brought me THE JOURNAL for August 5, brought me also a letter from an excellent oculist in Norfolk, Va., reporting a case of cataract with a vision of nil which, in less than a month, increased under Caritol to 20/70.

As to the advertisement of the S. M. A. Company in *Medical Economics*, I have not seen it to this day and know not what is in it other than what I have gathered from your statement in THE JOURNAL.

T. H. SHASTID, M.D., Duluth, Minn.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Boston, Sept. 19. Sec., Dr. Wm. H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Written, Boston, Chicago, Cleveland, New York, Philadelphia, St. Louis and San Francisco, Oct. 28. Oral, New York, Dec. 15-16. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written (Group B Candidates). The examinations will be held in various cities of the United States and Canada, Dec. 9. Application necessary before Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Boston, Sept. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: Regular, Sacramento, Oct. 16-19. Reciprocity, Sacramento, Oct. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 3. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: Basic Science, New Haven, Oct. 14. Prerequisite to license examination. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

GEORGIA: Atlanta, Oct. 10. Joint Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 3. Dir., Mr. F. L. Cruikshank, Boise.

ILLINOIS: Chicago, Oct. 17-19. Supt. of Regis., Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Sept. 12-14. Dir., Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. J. E. McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: Basic Science, Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. Regular, Minneapolis, Oct. 17-19. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 17-19. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. The examinations will be held at centers where there are five or more candidates, Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Basic Science, Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Dr. Charles Duncan, State House, Concord.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 23-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 12-13. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

RHODE ISLAND: Providence, Oct. 5-6. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

WISCONSIN: Basic Science, Madison, Sept. 23. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Delaware June Report

Dr. Harold L. Springer, secretary, Medical Council of Delaware, reports the written examination held in Wilmington, June 13-15, 1933. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Nineteen candidates were examined, 17 of whom passed and 2 failed. Six physicians were licensed by reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University School of Medicine	(1932)	78.3
School of	(1932)	76.6
School of	75.5
and Host	87.7
of Philadelphia	(1932)	75.3
University of Pennsylvania School of Medicine	(1930)	77.3
(1931) 82.2, 82.7, (1932) 78.5			
Woman's Medical College of Pennsylvania	(1932)	83
Medical College of Virginia	(1932)	75
University of Wisconsin Medical School	(1931)	75.7
Osteopaths			75, 75.4
College	FAILED	Year Grad.	Per Cent
Osteopaths			64.5, 72.6
College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Unive	(1927)	Minnesota
of	Philadelphia (1931)	Maryland
Hahn	(1930)	W. Virginia
Jeffers	(1898)	Penna.
Medico-Chirurgical College of Philadelphia	(1928), (1930)	Penna.
Univ. of Pennsylvania School of Medicine	(1930)	Penna.

Maryland Homeopathic Report

Dr. John A. Evans, secretary, Maryland Homeopathic Board of Medical Examiners, reports the written examination held in Baltimore, June 13-14, 1933. The examination covered 7 subjects and included 70 questions. An average of 70 per cent was required to pass. Three candidates were examined, all of whom passed. The following college was represented:

College	PASSED	Year Grad.	Per Cent
Hahnemann Medical College and Hospital of Philadelphia, 94, (1933) 87	(1932)	90,

Wyoming June Report

Dr. W. H. Hassed, secretary, Wyoming State Board of Medical Examiners, reports the written examination held in Cheyenne, June 5, 1933. The examination covered 14 subjects. An average of 75 per cent was required to pass. One candidate was examined and passed. One physician was licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Emory University School of Medicine.....	(1931)	79
College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
St. Louis University School of Medicine.....	(1931)	Missouri

Book Notices

The Cyclopedia of Medicine. George Morris Piersol, B.S., M.D., Editor-in-Chief, and Edward L. Bortz, A.B., M.D., Assistant Editor. Chief Associate Editors: W. Wayne Babcock, A.M., M.D., Conrad Berens, M.D., P. Brooke Bland, M.D., Francis L. Lederer, B.S., M.D., and A. Graeme Mitchell, M.D. Charles E. de M. Sajous, M.D., LL.D., Sc.D., Founder and First Editor. Volumes I-VII—Ab-Lac. Fabrikoid. Price, \$120 (to be in 12 volumes and index when complete). Each volume pagged separately. Philadelphia: F. A. Davis Company, 1931-33.

The founder and first editor of this cyclopedia brought out the first edition many years ago. It had considerable vogue, and its popularity led to the establishment of a special board with George Morris Piersol as editor-in-chief and Edward L. Bortz as assistant editor to handle the job of the present edition, with an excellent staff of five editors whose names are well known in medical work. This group has selected the contributors to the various volumes, of whom there are many. The editor points out that it has been the chief purpose of the material to bring about accurate diagnosis and intelligent management of disease as dependent on a knowledge of physiology. It is recognized that the aim of medical practice is the relief of symptoms, so that treatment is especially emphasized throughout the work. The authors have depended largely on the literature of the subjects about which they write and a suitable bibliography is appended to most of the longer articles. Here, then, is an encyclopaedia planned primarily for the general practitioner, whose needs it seems to meet.

Unfortunately, the volume begins with the classification "abdomen—acute," an exceedingly annoying phrase, referring, no doubt, to acute conditions within the abdomen. There are some twenty-eight pages discussing all of the various conditions that may affect the abdomen, its surgical anatomy and similar problems. The next subject is abortion. Here again is an article of thirteen pages, significant of the extended treatment in this encyclopaedia given to topics of importance. There are, moreover, eight or ten pages on acetanilid, and similar extended treatments of many other drugs of wide use in medicine. The subjects of lesser importance are printed in small type; those of greater importance are suitably emphasized by black-faced type and by large printing. The illustrations are well chosen and actually illustrate. The number of contributors is extensive, as has previously been mentioned, and it is invidious to pick any one of them for his special merit, since all have apparently done their best to present the topics which they discuss to the best advantage and in the light of much practical experience. In the vast majority of cases the authors are men who have gained repute for their research and for their special publications on the topics concerned.

Special attention must be called, however, because of the high quality of the contributions, to the article by Kirk on

amputations, cineplastic and prosthesis in the first volume, and to the series on anesthesia by various authorities in the same volume. There also appears in this volume an extended consideration of endocrinology under the title "Animal Extracts," obviously not the first place in which one would ordinarily look for a discussion of that subject.

In the second volume, the discussions of arthritis by several authorities and the extended consideration of autopsy and of bacteriologic technic deserve special mention. Here also is a monograph on the bladder and its diseases and also a fine series of articles on the bones, with such names as those of Haas, Orr, Bloodgood and Albee as contributors.

Among the exceptional contributions to the third volume are those concerning the cardiovascular system, hypertension, heart disease, and the cerebrum and cerebellum. The contribution by Dowman is noteworthy, probably among the last written by this fine contributor to his special subject. An excellent article on climatology, occupying some seventeen pages, is also a concentrated exposition of the best available knowledge in this field.

One may thus proceed through the remaining volumes, finding many subjects most adequately treated and others inadequate, as is invariably the case in symposiums and accumulated volumes of this type. In brief, it may be said for this work that it is among the most adequate of encyclopedic considerations of medicine thus far available. The physician will find it a ready reference of help on almost any topic that may concern him. The volumes are nicely printed on enamel stock; the illustrations, while not profuse, excellently chosen; the bindings neat and satisfactory.

The Glasgow Royal Maternity and Women's Hospital. Medical Report for the Year 1931. Prepared by D. M. Hart, M.B., Ch.B., F.R.F.P.S., Registrar to the Hospital. Boards. Pp. 104. Glasgow: Ald and Coghill, Ltd., 1932.

This gives the statistics of a large, active and complicated obstetric service. According to the custom in England—and a commendable one—the patients are divided into three categories: those who have had adequate prenatal care (52.8 per cent), emergency patients sent from the home service or other outside attendants (40.3 per cent) and cases entirely without previous medical attention (6.7 per cent). There were 4,442 patients in all. In addition to the in-service, 4,274 women were delivered at their own homes—truly an enormous obstetric service and with a large number of cases of dystocia due to the prevalence of rickets. Prenatal work is increasingly popular, and the number of abnormal in-cases was 2,753, or 62 per cent of all admissions; but more than half of these were antenatal. The numerous tables do not lend themselves to a proper review, because one might appear to criticize the treatment and compare results. Judging from the material admitted to the hospital, the number of forlorn cases being very large, the staff is to be congratulated on a low mortality rate.

Orthopedic Surgery. By Walter Mercer, M.B., Ch.B., F.R.C.S., Assistant Surgeon, Royal Infirmary, Edinburgh. With a foreword by John Fraser, M.C., M.D., Ch.M., Regius Professor of Clinical Surgery in the University of Edinburgh. Cloth. Temporary price, \$8. Pp. 695, with 371 illustrations. Baltimore: William Wood & Company, 1933.

This was written by a general surgeon and reflects in many instances the general surgical rather than the orthopedic point of view. This is not surprising, because the Edinburgh Medical School maintains that a surgical specialty is a branch of general surgery. The attitude that, to become a good specialist, one must be a good general surgeon first, is correct. The author was trained as a general surgeon and practices general surgery. The volume is an outgrowth of his lectures and clinics given under the direction of Professor Frazer. On reading the book, one might be inclined to accuse the author of plagiarism, even though, at the end of the book, he says he has "consulted" very freely from certain sources, which he names. He should state that he has "drawn" freely. It does not seem justifiable to use the space to give three illustrations on sacralization of the fifth lumbar transverse processes. There are many illustrations that are practically worthless for teaching purposes. At the bottom of page 223 the author refers to Calve's sclerogenic fluid, though Calot is probably meant. There are many mistakes in the spelling of names: Freiburg for Freiberg; Perthe's for Perthes; Sterne for Stern; Keimbösch for Kien-

böck; Lériche for Leriche; Goldthwaite for Goldthwait. The author speaks of the "Whitman spring" footplate. If there is any name that is inappropriate for a rigid metal arch support, it is to call it a "spring." As a textbook for students, this might be found to have considerable usefulness; but in view of the fact that there are several excellent books, this one would be considered fairly well down on the list to be recommended to students, interns and general practitioners.

Beiträge zur Klassifizierung der Tumoren des Mundes und seiner Nebengebilde. Inaugural-Dissertation zur Erlangung der zahnärztlichen Doktorwürde einer hohen medizinischen Fakultät der Universität Rostock. Vorgelegt von Herman Richard Churchill, D.D.S., a. o. Professor der zahnärztlichen Histologie, Histopathologie und vergleichenden Odontologie am Thomas W. Evans Museum und zahnärztlichen Institut der School of Dentistry, University of Pennsylvania. Paper. Pp. 48. Rostock: Carl Hinstorffs Hofbuchdruckerei, 1932.

The author presents a classification of tumors of the mouth designed particularly for the dentist. The histologic, embryologic and biologic aspects of mouth tumors are discussed briefly, with occasional reference to radiosensitivity. Special emphasis is placed on tumors arising from the dental structures. The classifications of different authors are referred to. The discussion of pseudotumors is important in that it calls attention to certain unusual tumor-like lesions so frequently confused with true neoplasms. The presentation is brief and accurate and should form a useful guide to those particularly interested in the histopathology and more especially the histogenesis of tumors of the mouth.

Clinical Diagnosis: Physical and Differential. By Neuton S. Stern, A.B., M.D., Associate Professor of Medicine, University of Tennessee School of Medicine, Memphis. Cloth. Price, \$3.50. Pp. 364. New York: Macmillan Company, 1933.

This book is an amplification of an outline of the author's method of teaching clinical diagnosis. Parts I and II are devoted to didactic teaching—the former to the teaching of the technic of history taking and physical examination, the latter to practical history taking and physical examination limited to pulmonary tuberculosis and heart disease, the patients taken from the outpatient department. Part III considers the technic of arriving at a diagnosis, and part IV concludes the volume with a tabulation of signs and symptoms of various diseases, alphabetically arranged. No doubt the author has gained much by organizing and arranging the material presented, but one cannot enthusiastically recommend the book as a reference work. It would be of value as an outline for an elementary course combining physical and clinical diagnosis.

Binocular Vision and the Modern Treatment of Squint. By Margaret Dobson, M.D., Ophthalmic Surgeon to the New Sussex Hospital for Women and Children, Brighton. Cloth. Price, \$2.75. Pp. 107, with 32 illustrations. New York & London: Oxford University Press, 1933.

This booklet is divided into seven chapters, covering binocular vision, binocular balance, suspension of vision, amblyopia, the refractor and dynamic retinoscope, dynamic retinoscopy in cases of squint, and orthoptic training. The majority of the illustrations are of some commercial firm's instruments, guaranteed to cure squint in six lessons in spare hours. The text tends to indicate a rather rudimentary and half-baked knowledge and abounds with misstatements, such as "to cover the non-squinting eye with a disc has not had very satisfactory results. . . . It is better, if this form of treatment is adopted, to cover the amblyopic eye when the sound eye is in use." Despite emphasis laid on refraction there is no mention made of the use of cycloplegics, and from the high sounding terms used to cover the lack of use of cycloplegia one would suspect the author of being an optometrist either in reality or in spirit. This view gains support from the flattering reference to an American optometrist who is known for his advocacy of various mechanical devices guaranteed to cure anything from amblyopia to squint of any degree. In fact, the book throughout is somewhat of a hybrid cross between an optometrist's vade mecum and the illustrated catalogue of a manufacturer of optical appliances. As for actual instruction in the orthoptic training of cases with squint, little is said although many instruments are described and illustrated. A short bibliography, composed in part of references to advertisements of different optical houses, concludes this more or less valueless addition to ophthalmic literature.

Peripheral Nerve Injuries. By Lewis J. Pollock, M.D., Professor of Nervous and Mental Diseases, Northwestern University, and Loyal Davis, M.D., Professor of Surgery, Northwestern University. Cloth. Price, \$10. Pp. 678, with 312 illustrations. New York: Paul B. Hoeber, Inc., 1933.

The industrial surgeon treating peripheral nerve injuries, the neurologist and the neurosurgeon will welcome this book as a scientific and yet practical source of information. Dr. Pollock has utilized his ample experience with war injuries to indicate the individual problems of injuries of various peripheral nerves. Adequate chapters concerned with examination, diagnosis and treatment of peripheral nerve injuries are followed by detailed accounts of injuries to individual nerves. The book is profusely and well illustrated. There is a good index, and for the specialist who desires access to the literature there is a verified bibliography of 1958 titles. The personal experiences of the authors, which form the bulk of the volume, stand almost alone in American literature as an example of scientifically valuable observations recorded by long and arduous studies during the war.

Valuer clinique des ongles. Par Henri Mangin-Balthazard. Préface du Docteur Léon Mac-Auliffe. Paper. Price, 16 francs. Pp. 123, with 38 illustrations. Paris: La Renaissance Moderne, 1932.

This work attempts to attach to the various shapes and abnormalities of the nails far reaching conclusions concerning the predisposition or present ailment of the patient. For instance, the author affirms that a certain shaped nail occurs in persons predisposed to cancer. He makes no mention of the number of cases in which he has seen this sort of nail or the percentage of such cases in which cancer occurred. If he feels that his own authority is insufficient proof, he refers to one of his confrères for substantiation. The book is a hodge-podge of a few recognized medical facts mixed with a large number of imaginary relationships. Almost no notice is taken of the influence of local injury. The book has no medical value.

Cervico-Vaginitis of Gonococcal Origin in Children: Report of a Project of the Bellevue-Yorkville Health Demonstration of New York City. By Walter M. Brunet, M.D., Dora M. Toile, M.D., Sara Alecia Scudder and Anne Ruth Medcalf. Foreword by Emily D. Barringer, M.D., Robert L. Dickinson, M.D., and William H. Park, M.D. Supplement No. 1 of Hospital Social Service Magazine. Paper. Price, \$2. Pp. 97, with illustrations. New York, 1933.

This intensive study of 241 cases of vaginitis represents a large amount of careful and thorough investigation. Not only was the medical aspect studied but also the social. In the group of 241 cases, 79 per cent were judged to present positive clinical gonorrhea, 14 per cent were suggestive and 7 per cent were negative clinically. Among 113 cases in which other members of the patient's family were examined, 92 per cent showed positive infections. It was found that treatment did not abort the disease, which is self limited and usually fades out within a few months. A number of practical recommendations are made. This book will prove to be of great assistance to gynecologists, pediatricians, bacteriologists and every one interested in the social welfare of a community.

Einführung in die Röntgenologie: Ein Lehrbuch für Ärzte und Studierende. Von G. F. Haenisch, Professor Dr. med., leitender Oberarzt am Allgem. Krankenhaus Barmbeck, Hamburg, und H. Holthusen, Prof. Dr. med., leitender Oberarzt am Allgem. Krankenhaus St. Georg, Hamburg. Mit einem Physikalisch-technischen Beitrag. Von A. Liechti, Priv.-Doz. Dr. med., Chefarzt am Inselspital, Bern. Paper. Price, 23 marks. Pp. 359, with 299 illustrations. Leipzig: Georg Thieme, 1933.

The joint authorship has made possible a treatise covering the use of the x-rays both diagnostically and therapeutically. The physics and technic as concerns each of the respective fields are handled with a reasonable brevity and clarity. The diagnostic coverage includes the osseous, vascular, pulmonary, gastro-intestinal and urinary systems. The obstetric uses are also touched. Many of the unusual conditions are illustrated and described. Normal conditions as well as anomalous variations are described and illustrated; a thorough understanding of these is necessary to avoid the pitfalls of inexcusable errors. The therapeutic section deals with dosimetry; this is important, since the adoption of a universal unit of intensity known as the roentgen has made therapy a more exacting practice, which will be a common factor understood by all radiotherapeutists. A chapter on the biologic influence of x-rays on various kinds of tissues and organs follows closely the facts as

they are now understood. The proper methods of application are described for the different diseases of the skin, inflammatory processes, blood dyscrasias, uterine diseases, endocrine disorders, and tumors both malignant and benign. The book will prove of great value to those who are just entering this field.

Diseases of the Skin: A Manual for Students and Practitioners. By the late Robert W. MacKenna, M.A., M.D., B.Ch. Third edition revised by Robert M. B. MacKenna, M.A., M.D., B.Ch., Honorary Consulting Dermatologist, Liverpool Heart Hospital. Cloth. Temporary price, \$6. Pp. 306, with 194 illustrations. Baltimore: William Wood & Company, 1933.

The reviser expresses the hope that he has not, by alterations or additions, detracted from the value of his father's work. On this point he can rest assured: the book is an excellent one, containing many of the interesting and valuable new developments in the specialty. Within its pages all the ordinary skin diseases and many of the rare ones are discussed briefly and well. The omission of nonsyphilitic leukoplakia must, however, be regretted, and the use of proprietary names for drugs creates an occasional difficulty for American readers. The etiologic classification has been followed as faithfully as possible, resulting in a chapter on diseases due to filter-passing viruses. The description of pink disease, erythredema polyneuritis, with a colored plate, also deserves special mention. The book is beautifully printed and the illustrations are many and excellent. It can be recommended highly as a short, timely treatise on the subject, written in a readable, clear style.

Estudio del líquido cefalo-raquídeo en los parálisis generales malarizadas. Tesis. Presentada por el Doctor José Pereyra Käfer, médico neurólogo del Instituto de Senología y Clínica Propedéutica. Universidad de Buenos Aires, Facultad de Ciencias Médicas. Paper. Pp. 76. Buenos Aires: Talleres Gráficos "Colegio Parroquial San José de Flores," 1932.

Käfer has studied the cerebrospinal fluid in seventeen cases of dementia paralytica treated with malaria. He divides the cerebrospinal fluid changes into four periods: the malarial period, in which there is an attenuation of the pressure and of the pleocytosis; the first and second postmalarial periods, in which there is an attenuation of the pleocytosis, and the last period, in which there is a diminution of the pleocytosis, and negative globulin, Wassermann and Lange reactions. The author has given a comprehensive review and bibliography of the subject.

Materia Medica and Therapeutics: A Text-Book for Nurses. By Linette A. Parker, B.Sc., R.N. Fifth edition. Cloth. Price, \$2.50. Pp. 379, with 32 illustrations. Philadelphia: Lea & Febiger, 1933.

A "good book" is one that gives all it should give and does not contain anything that is unnecessary. Judged from this standpoint, this is a fairly good book, at least as far as acquainting nurses with the drugs and their use is concerned. If there is an error it is in the direction of excessive conscientiousness in the attempt to cover the subject completely. Many of the minor drugs would probably be best handled in form of a reference list in an appendix rather than through harassing the nurse's overburdened mind with names that she may not need to know. One thing that is certainly objectionable in a book of this type is the introducing of structural chemical formulas, which to a person who does not understand them—and most nurses do not—is a decided embarrassment. It is unfortunate that physical therapy is taken up at all, because it is taken up fragmentarily. Nurses should certainly know more about hydrotherapy than is mentioned in this book; and they would have no idea, with this book as their guide, that there is such a thing as massage, medical gymnastics or occupational therapy.

Über die Silberreaktion der Zellen. Von Dr. Yutaka Kon, Professor an der Kaiserl. Universität Hokkaido, Sapporo, Japan. Paper. Price, 4 marks. Pp. 92, with 8 illustrations. Jena: Gustav Fischer, 1933.

By using a new method of silver staining, Kon demonstrated the presence in the cytoplasm of tissue cells of dark granules, which possess a great affinity for silver. This silver cell reaction, as Kon calls the phenomenon, is present in the cells of every organ—secretory glands, viscera, brain, or ductless glands, such as the hypophysis and the thymus. The granules are considered by Kon specific, for they differ from other granules present in tissue cells, such as mitochondria or Altmann's granules, lipid droplets or granules enclosed within histiocytes after the use of vital staining methods. The monograph is an

epitome of extensive and laborious work of fifteen years by Kon himself and a number of his collaborators, some of whom are representative investigators in their special fields of research. The organs of an enormous number of animals (herbivora, mammals, amphibia) have been studied under various conditions, in fresh and fixed state, for instance, and the results carefully analyzed and contrasted. This unquestionably important and original contribution will be of considerable assistance in the study of microchemistry and cell activity, as the silver granules seem to vary in their quantity, depending on the "extent of activity" displayed by a given cell.

An Elementary Handbook on Radium and Its Clinical Use. By D. F. Clephan, Full Time Assistant Under the Medical Research Council at the Barnato Joel Laboratories, Middlesex Hospital, and H. M. Hill, Radium Officer at the Royal Free Hospital. Cloth. Price, \$2. Pp. 164, with 16 illustrations. New York & London: Oxford University Press, 1933.

With the increasing interest and widening scope of radium therapy there has been created a greater need for brief but accurate and authoritative statements of a practical nature for the general practitioner. There have appeared in the literature several small treatises attempting to fill this need. This booklet is the most recent and one of the best. The history of the discovery of radioactivity and radium, and the landmarks in the history of radium therapy form interesting introductory chapters. The chapters dealing with the principles and technic of radium therapy and the treatment of cancer of special sites present accurately the views held and the methods employed in the leading cancer clinics of America and Europe. The chapter dealing with practical considerations in the use and care of radium gives particularly useful information to nursing, technical and medical personnel actually engaged in this work. The authors have succeeded in preparing a useful, brief and accurate statement of the clinical uses of radium. This handbook constitutes an excellent introduction to the subject and can be recommended to nurses, medical students and physicians who are interested in the subject of radium and its uses in medicine.

La spirochetose meningée. Par Jean Troisier, professeur agrégé à la Faculté de médecine de Paris, et Yves Boquien, interne des Hôpitaux de Paris. Paper. Price, 34 francs. Pp. 187, with 22 illustrations. Paris: Masson & Cie, 1933.

Since the discovery of *Spirochaeta pallida*, a number of diseases caused by the spirochete have been described, with special reference to localization in various parts of the body. Castellani, for instance, described a bronchial spirochetosis, and Vincent a spirochetosis in association with the fusiform bacillus, mainly of the mouth and pharynx. Since 1916, Troisier and Boquien have studied a meningeal spirochetosis caused by the spirochete of Inada-Ito. The authors describe the pathology and pathogenesis of the disease, the clinical picture, the diagnosis and the differential diagnosis, with special reference to the agglutination of blood and cerebrospinal fluid. One chapter is devoted to experimental meningeal spirochetosis. The book is well written and well illustrated.

Neurological Effects of Syphilis: Diagnosis and Treatment. By Bryan Buckley Sharp, M.D., M.R.C.P., Physician to Princess Beatrix Hospital, London. Cloth. Price, \$2. Pp. 92, with 3 illustrations. New York & London: Oxford University Press, 1933.

This purports to cover the fields of diagnosis and treatment of neurosyphilis. It does not succeed. The author's personal familiarity with the subject is so evidently small that one wonders how he achieved the temerity to write about it. Judging from the context, he has had actual personal experience with only twenty-five or thirty neurosyphilitic patients. The book consists of a review of only 106 poorly selected titles from the enormous literature. The brief summary is in general ill chosen and entirely out of balance; for example, the manifestations and diagnosis of dementia paralytica are dismissed in fourteen lines. Malaria treatment is discussed inadequately in nine and one-half pages, while a discussion of fever therapy by means of sulphur and various proprietary remedies occupies six pages. A disproportionate amount of space is devoted to congenital neurosyphilis. The book can be of no possible value to student or physician and there is no excuse for its publication. There is an inadequate index. It is unfortunate that the editors of medical publishing houses do not suppress worthless productions like this in manuscript.

Medicolegal

Physical Examination of Patient in Personal Injury Suit; Examinee's Statements to Examining Physician Admissible.—When a plaintiff in a personal injury suit has submitted to a number of physical examinations at the instance of the defendant, and when the testimony based on those examinations substantiates the defendant's theory of the case and tends to contradict the testimony of the plaintiff's witnesses, it is not an abuse of the trial court's discretion if it refuses a motion to require the plaintiff to submit to another examination by the defendant's physicians. The evidence derived from such an examination would be cumulative only. It was not error to permit a physician who had examined the plaintiff for the purpose of testifying to testify to statements concerning her bodily condition that she made to him in the course of the examination. The text-writers and many decided cases recognize a distinction between (1) statements made by a patient during the progress of diagnosis, to enable the physician properly to treat the patient, and (2) statements made by the examinee to the attending physician to assist him in diagnosing the examinee's condition, for the purpose only of testifying concerning it. Statements concerning the nature, symptoms and effects of the malady from which a patient is suffering when those statements are made fall within the first class. They are ordinarily received as original evidence, being regarded, not as hearsay evidence, but as the language of pain or as a part of the *res gestae* and therefore admissible. The admission of statements of the second class, when they are admitted, is on a different basis. With reference to such statements, it has been said: "It is generally, though not universally, held that statements made by an injured or diseased person to a physician as to past matters, while not admissible as evidence of the facts stated, may be testified to by the physician to show the basis of his opinion. 67 A. L. R. 18."

"The opinion of a surgeon or physician," said the Supreme Court of Appeals of West Virginia in the present case, "is necessarily formed on a part of the statements of the person examined describing his conditions and symptoms and the causes which have led to the injury or disease under which he appears to be suffering. It is obvious that it would be unreasonable to receive the opinion of the physician in evidence and at the same time shut out the reasons on which it was founded. Such a course of practice would take from the consideration of the court and jury the means of determining whether the judgment of the expert was sound and his opinions well founded and satisfactory." The court held, therefore, that the plaintiff in this case was entitled to have the physician who examined her for the purpose of testifying repeat to the jury the statements she made to him concerning her bodily condition, as a basis for his diagnosis.—*Curlman v. Monongahela West Penn Public Service Co. (W. Va.)*, 166 S. E. 848.

Workmen's Compensation Acts: Disability First Appearing After Termination of Employment Not Compensable.—During the course of his employment, a workman suffered from a dermatitis caused by the use of a chemical in cleaning tools. He was uncomfortable, but he lost no time from work. He left the employer in whose service he had developed dermatitis. About a year later the disease partly disabled him. The industrial commission awarded compensation, the circuit court, Dane County, Wis., affirmed the award, and his employer and the employer's insurer appealed to the Supreme Court of Wisconsin. The Wisconsin workmen's compensation act, said the Supreme Court, makes no provision for a case in which a workman has been exposed to certain occupational hazards while in the service of a given employer and the disability resulting from that exposure does not manifest itself until after the relation of employer and employee has ended. An accident that produces no disability is not compensable. The employee in this case, although undoubtedly uncomfortable as the result of his skin disease, was not incapacitated and did not suffer any loss of earnings while in the service of the defendant. Because no disability occurred during that service, the award of the industrial commission was vacated.—*Kimlark Rug Corporation v. Stansfield (Wis.)*, 246 N. W. 424.

Evidence: Medical Examiner May Testify Concerning Statements Made by Insane Examinee.—If a person consults a physician solely for the purpose of obtaining treatment and with no expectation of using him as a witness, the physician may testify as to the statements made to him by his patient, on which he bases his opinion. But if a person consults a physician, not to obtain medical treatment, but to obtain the services of that physician as a witness, the statements made to the physician by the person who consults him are ordinarily inadmissible. An exception occurs when the question at issue is the sanity of the person who consults the physician. If a person makes utterly irrational statements, the fact that he makes such statements is some evidence of mental disease, and a specialist in mental diseases or any other witness, testifying as to the sanity of that person, may repeat the irrational statements that were made. Such statements are not admitted as evidence of the facts stated; their evidentiary value lies in the fact that the examinee made them. "We think the true rule should be," said the United States Circuit Court of Appeals, Tenth Circuit, "that a doctor testifying to the mental condition of a patient may testify only to statements which tend to support his opinion."—*United States v. Roberts*, 62 F. (2d) 594.

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine, Chicago, Sept. 13-14. Dr. Arthur H. Ring, 163 Hillside Avenue, Arlington, Mass., Secretary.
- American Academy of Ophthalmology and Otolaryngology, Boston, September 18-22. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Executive Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Lucerne-in-Quebec, Canada, September 11-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.
- American College of Surgeons, Chicago, October 9-13. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
- American Congress of Physical Therapy, Chicago, September 11-15. Dr. F. B. Balmer, 35 East Wacker Drive, Chicago, Secretary.
- American Public Health Association, Indianapolis, October 9-12. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.
- American Roentgen Ray Society, Chicago, September 25-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.
- Associated Anesthetists of the United States and Canada, Chicago, October 8-12. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
- Association of Military Surgeons of the United States, Chicago, September 25-27. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.
- Colorado State Medical Society, Colorado Springs, September 14-16. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.
- Delaware Medical Society of, Wilmington, September 26-27. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.
- Idaho State Medical Association, Twin Falls, September 18-19. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.
- Indiana State Medical Association, French Lick, September 25-27. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 16-20. Dr. W. B. Peck, 12½ East Stephenson Street, Freeport, Ill., Managing Director.
- Kansas City Southwest Clinical Society, Kansas City, Mo., October 3-5. Dr. Lewis G. Allen, 601 Minnesota Avenue, Kansas City, Kan., Secretary.
- Kentucky State Medical Association, Murray, September 11-14. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, September 12-14. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.
- Mississippi Valley Conference on Tuberculosis, Kansas City, Mo., October 6. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.
- Nevada State Medical Association, Las Vegas, September 29-30. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.
- New England Surgical Society, Boston, September 29-30. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.
- Northern Minnesota Medical Association, Willmar, September 8-10. Dr. O. O. Larsen, Detroit Lakes, Secretary.
- Ohio State Medical Association, Akron, September 7-8. Mr. Don K. Martin, 131 East State Street, Columbus, Executive Secretary.
- Oregon State Medical Society, Portland, Oct. 26-28. Dr. Albert W. Holman, 364 Washington Street, Portland, Secretary.
- Pennsylvania, Medical Society of the State of, Philadelphia, October 2-5. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.
- Southern Minnesota Medical Association, New Ulm, September 25. Dr. M. C. Piper, Mayo Clinic, Rochester, Secretary.
- Utah State Medical Association, Salt Lake City, September 14-16. Dr. L. R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.
- Vermont State Medical Society, Barre, October 5-6. Dr. W. G. Ricker, 31 Main Street, St. Johnsbury, Secretary.
- Virginia, Medical Society of, Lynchburg, Oct. 24-26. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

45: 691-932 (April) 1933

Microsedimentation (Linzenmeier-Raunert Method): Its Serviceability and Significance in Pediatrics; Use of Modified Apparatus with Simplified Technique, also Serviceable in Ambulant Practice. A. Landau, Gothenburg, Sweden.—p. 691.

*Effect of Tonsillectomy and of Adenoidectomy on Immunity to Diphtheria. Anne Topper and S. Leader, New York.—p. 735.

Kernikterus: Jaundice of Nuclear Masses of Brain. H. M. Zimmerman and H. Yannet, New Haven, Conn.—p. 740.

Lowered Basal Metabolism in Conditions Characterized by Slow Pulse Rate. B. Schick and Anne Topper, New York.—p. 760.

Roentgenographic Study of Pulmonary Disease in Childhood: Use of Lateral and Oblique Diameters of Chest. H. S. Reichle and C. H. York, Cleveland.—p. 771.

Dental Disease in Hawaii: VI. Relationship Between Bone and Tooth Development in Infants. Martha R. Jones, N. P. Larsen and G. P. Pritchard, Honolulu, Hawaii.—p. 789.

Tonsillectomy and Immunity to Diphtheria.—Topper and Leader state that there is considerable clinical evidence that tonsillectomy favors the development of immunity to diphtheria. It is probable that the development of immunity after tonsillectomy depends largely on the presence of diphtheria bacilli in the environment and is therefore most likely to occur in congested areas in which the incidence of diphtheria is high. The authors report the results in eighty-one children who gave positive reactions to diphtheria before tonsillectomy and who returned for retesting six months later. The reaction of twenty-seven (33.3 per cent) remained positive, and that of fifty-four (66.6 per cent) became negative. Among those whose reactions remained positive were three children who had received toxin-antitoxin several years before tonsillectomy; two of them had received two series of prophylactic inoculations. The number of susceptible children, as shown by the Schick test, who acquired immunity after tonsillectomy was smaller than the number reported by Schick and Topper.

American Journal of Medical Sciences, Philadelphia

155: 601-748 (May) 1933

H. Niemann-Pick's Disease and Other Forms of So-Called Xanthomatosis. L. Pick, Berlin, Germany.—p. 601.

Studies on Structure and Function of Bone Marrow: III. Bone Marrow Biopsy. R. P. Custer, Philadelphia.—p. 617.

Leukemias Showing Haploid Leukoblasts Undergoing Mitotic Division in Circulating Blood. W. A. Groat, Syracuse, N. Y.—p. 624.

*Synthesis of Hippuric Acid: New Test of Liver Function. A. J. Quick, with technical assistance of Mary A. Cooper, New York.—p. 630.

Role of Liver in Tolerance of Dog to Quinidine. S. Bellet, I. S. Ravdin, T. M. McMillan and J. L. Morrison, Philadelphia.—p. 636.

Effect of Elevated Metabolism on Hearts of Frizzle Fowl. E. P. Boas, New York, and W. Landauer, Storrs, Conn.—p. 654.

Studies of Human Capillaries: Present-Day Technique for Study of Human Capillaries. A. W. Duryce and I. S. Wright, New York.—p. 664.

Self-Mutilation in Chronic Encephalitis: Avulsion of Both Eyeballs and Extraction of Teeth. S. P. Goodhart and N. Savitsky, New York.—p. 674.

Digestion of Protein by Patients with Gastric Anacidity. D. C. Hines, San Francisco.—p. 684.

*New Therapy of Peptic Ulcer: Continuous Alkalinized Milk Drip into the Stomach. A. Winkelstein, New York.—p. 695.

*Prediabetic State: Its Relation to Obesity and to Diabetic Heredity. J. D. Tyner, Canandaigua, N. Y.—p. 704.

Primary Peritonitis Complicating Scarlet Fever. F. G. Kojis and E. J. McCabe, New York.—p. 710.

Typhoid Abscess of Breast. S. W. Sappington, Philadelphia.—p. 719.

Synthesis of Hippuric Acid.—Quick describes a simple test for liver function, depending on the excretion of hippuric acid following the administration of sodium benzoate, for which 5.5 Gm. of sodium benzoate dissolved in 30 cc. of water is administered one hour after a breakfast consisting of coffee and toast. The patient is then given half a glass of water. Immediately after taking the drug the patient voids urine and

then complete hourly specimens are collected for four hours. These are preserved with toluene, and the hippuric acid is determined in each specimen. In normal adults, the output of benzoic acid as hippuric acid is approximately 1 Gm. or more during the second and third hours, and the total for the four hours is from 3 to 3.5 Gm. For clinical purposes the following method is adaptable: Each hourly specimen is measured, transferred to a small beaker and acidified with concentrated hydrochloric acid until it is acid to congo red; 1 cc. of the acid is usually sufficient. The solution is vigorously stirred until the precipitation of the hippuric acid is complete, and then it is allowed to stand for one hour at room temperature. The precipitate is filtered off on a small Buchner funnel or a filter plate, washed with a small quantity of cold water and allowed to air dry. The hippuric acid thus obtained is either weighed or titrated with two-tenths normal solution of sodium hydroxide, phenolphthalein being used as an indicator. To obtain the total hippuric acid, one must add to the amount thus obtained the calculated quantity remaining in solution; 100 cc. of urine will dissolve 0.33 Gm. of hippuric acid. In the event that any specimen exceeds 125 cc., it should be slightly acidified with acetic acid and concentrated on the water bath to about 50 cc. before the hippuric acid is precipitated. The results are best expressed in terms of benzoic acid. To convert hippuric acid to benzoic acid, one multiplies by 0.68. The author observed a diminished excretion of hippuric acid in syphilitic cirrhosis, catarrhal jaundice and in moderately long standing obstructive jaundice. Normal results were obtained in cholecystitis and in two cases of portal cirrhosis. The results obtained indicate that the test offers an approximate quantitative measure of liver damage and that it is a valuable aid in the diagnosis of liver diseases.

New Therapy of Peptic Ulcer.—During the past twenty-two months, Winkelstein treated forty-two patients suffering from peptic ulcer. The entire group consisted of adult males whose average age was 43 years. In the duodenal ulcer group the average duration of symptoms was four years and three months. Ten patients have been symptom free for from three to six months, three for one year, three for one and one-half years, one for two years and one for three years. In three instances the radiographic signs, that is, an irregular duodenal bulb, disappeared at the end of three weeks of the treatment. In the sixteen patients having gastric ulcer, the duration of symptoms averaged six years. A follow up study reveals that four are well at the end of three months, five at six months, five at nine months, one at eighteen months and one at twenty-two months. On the basis of the results obtained in these forty-two cases, the author outlines and advocates the method he used in their treatment, which consists of the continuous drip of alkalinized milk into the stomach. The procedure is as follows: A Rehfuß tube is passed into the stomach of the patient and connected by a long piece of rubber tubing to a gravity flask, and a rectal drip indicator is interposed in the system. A solution consisting of milk containing 5 Gm. of sodium bicarbonate to the quart is allowed to drip into the stomach at the rate of 30 drops a minute. Thus the patient receives 3 quarts of milk and 15 Gm. of sodium bicarbonate a day. Such a solution will theoretically neutralize 9 quarts of tenth normal hydrochloric acid. Certain obvious difficulties will be avoided if the patient is accustomed to the tube by doing a day and a night fractional test meal first and if, after forty-eight hours of the drip, a study of the chemistry of the blood is made, particularly its alkalinity (carbon dioxide combining power). If this approaches 80 volumes per cent or if symptoms of alkalosis appear, the alkali should be decreased.

Prediabetic State.—Tyner analyzed a series of 500 normal and 500 prediabetic carbohydrate tolerance tests in order to determine the incidence of obesity and diabetic heredity in the prediabetic state. Body weight cannot be correlated with the prediabetic state. Obesity does not present an increased incidence nor underweight a decreased incidence of prediabetes; the two are equally associated with it. Prediabetes is correlated, in general, with age. The peak is reached in the seventh decade and thereafter declines. Sex does not appear to be a factor in prediabetes. Heredity of the direct diabetic type shows an increased incidence of prediabetes in the obese, not in the thin. Heredity of the familial type is not associated with prediabetes any more than the average group of cases.

American Journal of Orthopsychiatry, Menasha, Wis.

3: 95-240 (April) 1933

- Hand Preference in Primitive Man. I. S. Wile, New York.—p. 95.
Treatment of Maternal Attitudes in Problems of Guidance. Madeline U. Moore, New York.—p. 113.
Rebellion and Its Relation to Delinquency and Neurosis in Sixty Adolescents. S. Ackerly, Louisville, Ky.—p. 147.
Psychiatry and the Courts. M. S. Guttmacher, Baltimore.—p. 161.
Study of Recidivists and First Offenders of Average and Defective Intelligence. Myra E. Shimberg and Judith Israelite, Boston.—p. 175.
Some Techniques in Securing Rapport with Preschool Children. Edith F. Symmes, New York.—p. 181.
Concept of Egomorphism. G. J. Rich, Chicago.—p. 191.

American Journal of Physical Therapy, Chicago

10: 1-36 (March) 1933

- Progress in Physical Therapy. J. S. Hilben, Pasadena, Calif.—p. 5.
Nutrition Investigations on the Peanut. D. E. Lane.—p. 15.
Treatment of Erysipelas by Ultraviolet Light. R. K. Brown.—p. 21.
Treatment of Flat Feet by Corrective Exercises. J. C. Elsom, Madison, Wis.—p. 28.

10: 1-36 (April) 1933

- Basis of Light in Dermatology: Ultraviolet Exposure of Healthy Persons. H. Goodman, New York.—p. 5.
Colonic Therapy. J. W. Wiltsie, Binghamton, N. Y.—p. 11.
New Methods in Application of Diathermy. H. N. Hulander, Brooklyn.—p. 13.
Importance of Ratio in Nutrition. D. E. Lane.—p. 14.

American Journal of Syphilis, St. Louis

17: 161-304 (April) 1933

- Certain Unsolved Aspects of Syphilitic Infection Specially Referring to Possible Existence of Spirochaeta Pallida Carriers. W. E. Coutts, Santiago, Chile, South America.—p. 161.
Syphilis in Highlands of Guatemala. W. Curth, New York.—p. 164.
Influence of Reticulo-Endothelial "Blockade" and Splenectomy on Experimental Trypanosomiasis and Syphilis and Chemotherapeutic Properties of Arspenamine and Neoarsphenamine. J. A. Kolmer and J. F. Schamberg, with assistance of Anna Rule and B. Madden, Philadelphia.—p. 176.
Contact Infection of Rabbits in Experimental Syphilis. J. F. Mahoney and K. K. Bryant, Stapleton, Staten Island, N. Y.—p. 188.
Vascular Permeability of Syphilitic Lesions. P. D. Rosahn, New York.—p. 194.
Penetration of Syphilitic Virus into Experimental Cancer Tumors of Mice. Marie Severac and G. W. Raiziss, Philadelphia.—p. 201.
*Comparative Pharmacologic Study of Absorption, Distribution and Excretion of Injectable Bismuth Preparations. M. R. Thompson, G. E. Cwalina, C. T. Ichniowski and B. S. Roberts, Baltimore.—p. 205.
Relation of Amino Acid Nitrogen to Wassermann Reaction. G. Brewer, Washington, D. C.—p. 221.
*Quantitative Hinton Test. D. L. Belding and Julia G. Arrowood, Boston.—p. 228.
Standardization of Complement Fixation Test for Syphilis. Ruth Gilbert, Albany, N. Y.—p. 238.

Comparative Study of Bismuth Preparations.—Thompson and his associates made a comparative study, on dogs, of five typical bismuth preparations as to rate of absorption from the site of injection, distribution in kidneys and liver, urinary excretion, irritation at site of injection and toxicity. They observed considerable differences in the rate of absorption among the different preparations, but even in those absorbed most slowly, only small amounts remained unabsorbed after the first week. The intimate relationship between the rate of absorption and toxicity has been confirmed. Preparations exhibiting rapid absorption show the greatest toxicity. Following toxic doses, the greatest tissue destruction appeared to occur in the liver and kidneys. A relationship was observed between the rate of absorption and the rate of urinary excretion, but the urinary excretion was found to be reduced to traces while considerable amounts of bismuth still remained fixed in the tissues. Distinct doubt is thrown on the desirability of too rapid absorption in bismuth preparations, because of a correspondingly rapid rate of excretion and the attending tendency of overburdening the kidneys and liver. It does not necessarily follow that a more rapid absorption will result in a more effective concentration against syphilis, since the excess amounts provided thereby may be quickly taken up by the storage and excretory organs. The authors believe that this question can be answered only by direct comparative studies involving the disease itself, either in experimental animals infected with syphilis or from comparative clinical studies. There is a definite possibility that the more slowly absorbed preparations would prove as effective, with a lesser tendency toward toxicity and more prolonged effect from each dose.

Quantitative Hinton Test.—The Hinton test as Belding and Arrowood modify it for quantitative studies is as follows:

The blood serum of the patient is previously inactivated at 55 C. for twenty minutes. Stock antigen is prepared in accordance with the original Hinton technic by the addition of one part of antigen extract to nine parts of a 0.7 per cent solution of cholesterol in absolute alcohol. Antigen dilution for use in the daily tests is made by adding to one part of stock antigen two parts of a 7 per cent solution of sodium chloride by dropping with continual shaking, and allowing the mixture to stand for thirty minutes. Then twelve parts of sodium chloride are added, with thorough mixing, and finally fifteen parts of 50 per cent glycerin. This mixture is allowed to stand for five minutes before it is added to the tubes. Six tubes, 100 by 13 mm., are set up for each test. To these the patient's serum is added in decreasing amounts, from 0.4 to 0.0125 cc., and then the volume in each tube is made up to 0.5 cc. with a solution of sodium chloride. Five-tenths cubic centimeter of diluted antigen is then placed in each tube and mixing accomplished by vigorous shaking. Control tests with a known positive serum, a known negative serum, and a control of 0.5 cc. of the antigen diluted with 0.5 cc. of the sodium chloride solution are carried out as a routine. The tubes are incubated in a water bath at 27 C. for eighteen hours. The authors believe that the quantitative Hinton test has the following advantages over the qualitative test: 1. The results of the test may be expressed quantitatively. Because of its stability, the test is sufficiently accurate to be of value for following the serologic results of treatment in patients. 2. The readings are clear cut and the additional tubes eliminate the danger of any error that may arise from zone phenomena. 3. The volume is constant in each tube and the salt concentration is uniform. 4. The test is somewhat easier to manipulate from a technical standpoint.

Annals of Surgery, Philadelphia

97: 481-640 (April) 1933

- Effects of Sympathetic Nerve Surgery in Certain Intestinal Conditions. F. S. Wetherell, Syracuse, N. Y.—p. 481.
Surgery of Sympathetic Nervous System: Operative Notes Based on Two Hundred and Seventy-Three Operations. S. F. Stewart, Los Angeles.—p. 485.
Surgical Aspects of Autonomic Nervous System. W. D. Abbott, Des Moines, Iowa.—p. 494.
*Intermittent Claudication Without Gangrene Controlled by Sympathetic Nerve Block. F. L. Reichert, San Francisco.—p. 503.
*Phrenic Neurectomy: Results in One Hundred Cases. R. Douglass, Loomis, N. Y.—p. 508.
Bronchoscopic Observations on Postoperative Pulmonary Complications. C. Jackson and C. L. Jackson, Philadelphia.—p. 516.
Penetrating Stab Wounds and Bullet Wounds of the Chest: Study of Sixty-Eight Cases Operated on Between June 1, 1931, and April 30, 1932, with Description of New Operative Procedure of Extrapleuralization and Exteriorization of Pulmonary Laceration. J. F. Connors and J. B. Stenbuck, New York.—p. 528.
Cardiorrhaphy in Wounds of Heart. M. Mamikonoff, Baku, U. S. S. R.—p. 547.
*Jejunostomy: Clinical and Experimental Study of Technic of Operation. W. H. Barber, New York.—p. 553.

Sympathetic Nerve Block.—Reichert states that relief of intermittent claudication in the arteriosclerotic individual may be secured by interruption of the sympathetic pathways with alcohol. The usual tests to determine the efficiency of sympathetic interruption, such as the thermal response in the skin to spinal anesthesia, foreign protein or peripheral nerve block, are not applicable in determining the effect of such interruption on the pain of claudication. Relief of pain is not infrequently obtainable even in the absence of a rise in skin temperature. When the thermal response alone is the only criterion for or against sympathetic interruption, certain cases will be overlooked in which sympathetic block will be of distinct benefit. A satisfactory diagnostic procedure to determine the relief from pain is a paravertebral injection of the sympathetic chain with procaine hydrochloride, which enables the ambulatory patient to assist the physician in judging whether permanent interruption will be beneficial. The author's twenty-five cases of intermittent claudication without gangrene have been materially and occasionally strikingly benefited by permanent interruption of the sympathetic chain by a paravertebral injection of alcohol following the diagnostic use of procaine hydrochloride.

Phrenic Neurectomy.—Douglass points out that phrenicectomy is indicated and is a valuable independent collapse procedure when operative intervention is required in the treatment of a limited group of patients with pulmonary tuberculosis who have not responded to routine sanatorium care. The clinician's

aid is important in selecting the cases suitable for operation. This collapse procedure is regarded as successful only when it is followed by the closure of a cavity as shown by roentgenograms and by consistently negative sputum. The best post-operative results obtain in cases presenting a thin walled cavity, not more than 3 by 3 cm. in diameter, with little surrounding infiltration and located centrally in the lung parenchyma. On the other hand, phrenicectomy promises little and should not be used in cases presenting dense infiltration, thick walled cavities or large cavities. The author presents an analysis of sixty-two cases in which phrenicectomy was the only operative procedure affecting the course of pulmonary tuberculosis, showing 14.5 per cent discharged arrested cases, with sputum negative on concentration for six months or more; 19.4 per cent apparently arrested, with sputum negative on concentration for at least three months; 29 per cent quiescent, with constitutional symptoms absent for at least two months, but without consistently negative sputum; 19.4 per cent improved, with constitutional symptoms lessened; 4.8 per cent unimproved, with essential symptoms unabated, and 12.9 per cent in which it was necessary to perform pneumothorax. The author records an original observation describing "passive motion of the diaphragm" following phrenicectomy; the motion is due to a combination of marked costal excursion flattening the diaphragm on inspiration and a rise of the diaphragm caused by forced expiration.

Technic of Jejunostomy.—Barber recommends a method of utilizing a muscle peritoneal graft which seals the suture line, suspends the jejunal loop, provides for omental protection, and is believed to favor spontaneous closure of the ostomy. This procedure consists of an attached muscle peritoneal flap slit off from the lateral edge of the abdominal wound and of sufficient size and shape to cover adequately the line of suture in the Witzel or the circumference of the tube in the Stamm-Kader method. This flap is sutured with interrupted Lambert sutures to the jejunal wall. Over this transplant is laid the edge of the great omentum. The wound is thereafter closed in layers with interrupted sutures about the tube. The loop remains suspended by the wound flap. The flap is nourished through its attached base and through the new vascular connections from the underlying serosa and overlying omentum. The intraperitoneal adhesions protect the body cavity from peritonitis, and the omentum, besides protecting the stomatized loop from harmful adhesions, facilitates spontaneous closure of the ostomy. This technic varies so little from the one in common usage, requires so little additional time to accomplish, and seemingly has so much more to recommend it, that the author does not hesitate to suggest it. He considers intestinal obstruction and peritonitis the essential causes of failure in a fair proportion of sudden deaths not attributable to systemic disease or new growth occurring within the first few days after jejunostomy. Symptoms and changes similar to those in acute high intestinal obstruction observed after jejunostomy are relieved by administering gastroduodenal secretions with the jejunal feedings. The present method of Witzel jejunostomy with peritoneal fixation appears safer than a similar one with interposed omentum. The Stamm-Kader or inversion technic appears to present less danger from obstruction, necrosis and perforation than the Witzel or invagination method. The author suggests that jejunostomy with an indwelling catheter be reserved for those emergency cases in which jejunostomy is required for a few days only, and that during this interval gastroduodenal secretions be collected and administered with the jejunal feedings.

Archives of Dermatology and Syphilology, Chicago 27: 725-900 (May) 1933

- Leukemic Myelosis Associated with Specific Nodules in Skin: Report of Case and Review of Literature. R. E. Barney, Cleveland.—p. 725.
- *Trichophyten Test: Report of Three Hundred and Fifty Cases. E. Muskathlit and W. Director, New York.—p. 739.
- Urinary Proteose: Allergic Dermatoses and Eczema-Asthma-Hay Fever Complex. F. E. Cormia, Philadelphia.—p. 745.
- Dermatosis Papulosa Nigra (Castellani) of Unusual Distribution (Acanthosis Papulosa Nigra). F. A. Diasio, New York.—p. 751.
- Self-Sterilizing Powers of the Skin: IV. Effect of Drugs and Hormones. T. Cornbleet, Chicago.—p. 756.
- *Red Cell Sedimentation Test in Dermatology: Preliminary Report. L. Tulipan and W. Director, New York.—p. 759.
- Cutaneous Noduloid Tuberculosis of Anergic Type, with Development into Active (Allergic) Pulmonary Tuberculosis. S. Crawford, Pittsburgh.—p. 766.

- Lymphogranuloma Inguinale (Durand-Nicolas-Favre Disease): Preliminary Report of Three Cases in Omaha. C. C. Tomlinson and O. J. Cameron, Omaha.—p. 778.
- *Ainhum: Report of Case with Roentgenologic Findings and Review of Literature. D. Bloom and B. Newman, New York.—p. 783.
- Leprosy: Comments on In Vitro Behavior of Lepra and Certain Other Acid-Fast Micro-Organisms in Presence of Leukocytes. O. E. Denney and Bernice E. Eddy, Carville, La.—p. 794.
- Mycosis Fungoides, "A Tumeur d'Emblée Solitaire": Report of Case. J. J. Eller and C. R. Rein, New York.—p. 807.
- Nodular Subepidermal Fibrosis. H. E. Michelson, Minneapolis.—p. 812.
- Sarcoid: Report of Unusual Case of Disseminate Type. F. C. Combes, New York.—p. 821.

Trichophyten Test.—Muskathlit and Director describe a method of preparing a polyvalent fungous extract containing endopods and exopods of *Trichophyton violaceum*, *Microsporon audouini* and *Epidermophyton interdigitale*. These strains were grown separately in liquid medium—Sabouraud's broth. After solution of all the materials, the medium was filtered through paper and about 150 cc. of it distributed in several 250 cc. flasks and sterilized in the autoclave at 120 C. Fungi grew in this medium for three months and then the solid fungous growth was separated from the liquid by filtration through paper, ground in a mortar and extracted with the corresponding fluid portion by standing in the icebox for twenty-four hours. Further filtration was carried out through paper, the filtrate was sterilized by passing it through a Berkefeld filter, and phenol was added to make a 0.25 per cent solution to prevent bacterial contamination. Equal parts of the three extracts of different fungi were mixed and the final product was distributed in sterile vaccine bottles with a capacity of 5 and 10 cc., which were hermetically plugged and stored on ice for use. The test of sterility was made by planting cultures on Sabouraud's, plain and chocolate agar, which showed no growth after one week's incubation at 37 C. The preparation remained clear and transparent without any signs of contamination for more than a year. The control tests were made with the same sterilized liquid medium, with 0.25 per cent phenol, but without fungous growth. The extract was taken from the bottle by piercing the plug with a sterile hypodermic needle on a tuberculin syringe. The test was performed by injecting intradermally 0.1 cc. of undiluted extract on the flexor surface of one forearm; the control solution was similarly injected on the opposite forearm. The injection produced a white, sharply defined wheal of about 1 cm. in diameter, which soon disappeared. No cutaneous reaction was observed from the control test. The authors tested intradermally 350 patients, of whom 300 were clinically mycotic and 50 were not mycotic. Nonspecific reactions were observed in 4 per cent of the nonmycotic patients. The trichophyten test gave a positive reaction in 72.3 per cent of the proved mycotic patients. The clinical diagnosis was more frequently corroborated by the test than by the laboratory examination; for example, in clinically mycotic cases the test was positive in 60.3 per cent, while laboratory examination was positive in only 39.7 per cent. Patients with highly inflammatory lesions gave a higher percentage of positive tests; however, a positive reaction was found in many cases presenting limited and slightly inflammatory lesions. The test was positive in cases in which the infection was due to various fungi of human and animal types, particularly in those caused by *epidermophyton interdigitale*. Monilia infections of the skin also gave a positive reaction, but less frequently than those due to filamentous fungi (*Trichophyton*, *Epidermophyton* and *Microsporon*).

Red Cell Sedimentation Test in Dermatology.—Tulipan and Director performed the red cell sedimentation test in 115 cases presenting thirty-five diseases of the skin. They employed the method of Westergren. The sedimentation rate was usually normal in lupus erythematosus and in erythema multiforme, including the bullous variety. It was increased in tuberculosis of the skin and in erythema nodosum and markedly so in the eruption due to phenolphthalein. It was increased in dermatitis herpetiformis, whereas in other generalized grouped vesicular dermatoses, including dermatophytids, it was normal. The sedimentation rate in epithelioma varied from normal to a pathologic increase, depending on the extent of the lesion. It was high in a case of Hodgkin's disease in which there were cutaneous lesions. It gave borderline readings in mycosis fungoides and erythroderma. Normal readings were obtained in some of the more common dermatoses. Because of the

increased rate in six cases of pemphigus reported by Pessôa and Ribeiro and in two cases reported by the authors, they suggest the sedimentation test as a possible aid in differentiating pemphigus from erythema multiforme bullosum.

Ainhum.—Bloom and Newman report a case of ainhum of two years' duration in an American Negro who lived in New York for the last twelve years. In spite of the fact that the patient had syphilis, the authors came to the conclusion, after a thorough physical and a fairly complete laboratory examination and after having observed the negative result of anti-syphilitic treatment, that the presence of the condition could not be traced to a syphilitic origin. Roentgenologic study of the bones of the affected toe has also been made, and the observations are in accord with those of the few previous reports in the literature, which they review. They are inclined to believe that the pathologic process is a mechanical one produced by a fibrotic constriction induced by some previous mechanical or infectious injury.

Canadian Public Health Journal, Toronto

24: 155-204 (April) 1933

Health Hazards from Specific Poisons in Industry. F. M. R. Bulmer, Toronto.—p. 155.

Diphtheria Immunization in Quebec. A. R. Foley, Quebec, Que.—p. 162.

The Preschool Child and School Medical Inspection. F. S. Burke, Ottawa, Ont.—p. 170.

Sex Differences in Infant Mortality. J. Wyllie, Kingston, Ont.—p. 177.

Journal of Comparative Neurology, Philadelphia

57: 199-367 (April 15) 1933

Swimming Plate Rows of Ctenophore, Pleurobrachia, as Gradients: Comparative Data on Other Forms. C. M. Child, Chicago.—p. 199.

Correlation of Movement and Nerve Supply in Transplanted Limbs of Amblystoma. J. S. Nicholas, New Haven, Conn.—p. 253.

Optic Tectum and Its Related Fiber Tracts in Blind Fishes: A. Troglitchys Rosae and Typhlichthys Eigenmanni. H. H. Charlton, Columbia, Mo.—p. 285.

Correlated Anatomic and Physiologic Studies of Growth of Nervous System of Amphibia: XI. Proliferation of Cells in Spinal Cord as Factor in Individuation of Reflexes of Hind Leg of Amblystoma Punctatum, Cope. G. E. Coghill, Philadelphia.—p. 327.

Brain Cast of Sinanthropus: Review. D. Black, Peiping, China.—p. 361.

Journal of Experimental Medicine, New York

57: 527-704 (April 1) 1933

*Analysis of Opsonic and Tropic Action of Normal and Immune Serums Based on Experiments with Pneumococcus. H. K. Ward and J. F. Enders, Boston.—p. 527.

Studies on Meningococcal Infection: I. Biologic Properties of "Fresh" and "Stock" Strains of Meningococcus. G. Rake, New York.—p. 549.

Id.: II. Monovalent Diagnostic Serums Prepared from "Fresh" and "Stock" Strains. G. Rake, New York.—p. 561.

Serologic Differentiation of Human and Other Groups of Hemolytic Streptococci. Rebecca C. Lancefield, New York.—p. 571.

Experimental Production of Pylorospasm and Gastric Retention in Rats. F. Hoelzel and Esther Da Costa, Chicago.—p. 597.

*Value of Skin Test with Type-Specific Capsular Polysaccharide in Serum Treatment of Type I Pneumococcal Pneumonia. T. Francis, Jr., New York.—p. 617.

Anaphylactic Shock by Azodyes. K. Landsteiner and J. Van Der Scheer, New York.—p. 633.

Hemoglobin Production Factors in Human Liver: I. Normal, Infection and Intoxication. G. H. Whipple and F. S. Robschey-Robbins, Rochester, N. Y.—p. 637.

Id.: II. Liver Degeneration, Cancer, Cirrhosis and Hepatic Insufficiency. F. S. Robschey-Robbins and G. H. Whipple, Rochester, N. Y.—p. 653.

Id.: III. Anemias: Primary, Aplastic and Secondary Leukemias. G. H. Whipple and F. S. Robschey-Robbins, Rochester, N. Y.—p. 671.

Effect of Proteolytic Digestion Products on Multiplication and Morphologic Appearance of Monocytes. Lillian E. Baker, New York.—p. 689.

Opsonic and Tropic Action of Serums.—Ward and Enders' experiments demonstrated that, in normal unheated human serum, virulent pneumococci may be prepared for phagocytosis by two separate antibodies, acting in conjunction with complement. One of these is the type specific anticarbohydrate antibody reacting with the carbohydrate fraction of the pneumococcus. The other is probably also a type specific antibody, but quite distinct from the former, and therefore must react with a different antigenic constituent of the bacterium. In the normal human serum heated to 56 C., these two antibodies may, after prolonged contact with the organism, promote phagocytosis of the pneumococcus without the adjuvant action

of complement. Although these two antibodies are equally effective in the phagocytosis of twenty-four hour culture organisms by normal blood, the anticarbohydrate antibody tends to become the predominant factor as the pneumococci approach the state in which they exist in the animal body. So far the authors have been able to show, the anticarbohydrate antibody is the only antibody in immune serum that can induce phagocytosis. This substance by itself is active in a phagocytic system, but, just as in the normal serum, complement enhances its effect. The failure to demonstrate the presence in the immune serum of an antibody, distinct from the anticarbohydrate antibody and analogous to that found in the normal serum may be due to the experimental difficulty of removing all the anticarbohydrate antibody from a concentrated immune serum. Thus it is seen that a single well defined antibody (the anticarbohydrate antibody) may be responsible for the phagocytic action of normal unheated serum, normal heated serum, inactivated immune serum, and immune serum activated by complement. These facts appear to the authors to invalidate Neufeld's division of the phagocytic antibodies into (1) bacteriotropins (antibodies, the phagocytic titer of which is not raised by the addition of complement), and (2) opsonins (antibodies, comparable to the lysins, which are active only in the presence of complement). Complement alone is incapable of inducing phagocytosis of the pneumococcus. In the phagocytic process, it appears simply to increase the speed at which the reaction takes place. Its part may be compared to that of a catalyst in a chemical reaction. On the basis of these observations the authors propose that the term "tropin" be discarded as misleading and unnecessary and that the term "opsonin" be retained to denote any heat stable antibody that prepares bacteria for phagocytosis. Contrary to current usage, it would not suggest a combination of antibody with complement.

Value of Skin Tests.—Francis made skin tests with type I type-specific capsular polysaccharide in fifty-three cases of type I pneumococcus lobar pneumonia, forty-eight of which were treated with antipneumococcus type I serum. In all but one of the forty-six patients who recovered, a positive, immediate skin reaction was obtained at about the time of recovery. In the seven fatal cases, reactions were consistently negative, even in the presence of circulating type specific antibodies. The skin test has proved to be an extremely valuable guide to serum therapy, and a definite prognostic aid. The test has distinct advantages over the agglutination reaction in that it is not merely an index of circulating antibodies. When positive, it invariably denotes that recovery has begun; when negative, it indicates further serum therapy. The mechanism of the positive skin test is closely related to that operative in recovery from pneumonia and is apparently the resultant of antibody and tissue activity.

Journal of Thoracic Surgery, St. Louis

2: 323-428 (April) 1933

Operability of Carcinoma of the Lung. H. A. Carlson and H. C. Ballou, St. Louis.—p. 323.

Experimental Studies on Effect of Paralysis of Diaphragm and of Its Removal. F. L. Reichert, San Francisco.—p. 349.

Hernia of the Lung. H. I. Goodman, New York.—p. 368.

*The Mechanics of Eructation: Hitherto Undescribed Function of Diaphragm. M. Joannides, Chicago.—p. 380.

*Etiology, Prevention and Treatment of Postoperative Hemorespiratory Complications in Surgical Treatment of Tuberculosis: Endotracheal Anesthesia Combined with Bronchial Suction. (Eighty-Four Cases; One Hundred and Fifty-Two Operations). P. N. Coryllos, New York.—p. 384.

Mechanics of Eructation.—Joannides found that the diaphragm is the muscle concerned in eructation. The contraction of the left hemidiaphragm coincides with the rise of the right half. There is an independent and inverse activity of the two leaves of the diaphragm, in that one side contracts while the other side relaxes. The normal position of the cardia shows a definite angulation and this angulation must be eliminated before air or gastric contents may be squeezed into the esophagus. In paralysis of the left hemidiaphragm, because of the increased rise of the dome, there is an increase in the acuteness of the angle at the cardia. In addition to this anatomic change, the functional effects produced by the paralysis of the muscle prevent the normal characteristic contractions seen in the act of belching, with the result that these patients have a tendency to distress and inability to regurgitate.

Surgical Treatment of Tuberculosis.—Coryllos reports the results of 250 thoracoplastic operations performed on 133 patients. He presents evidence which shows that the cardiopulmonary complications are due to respiratory and circulatory deficiency, causing oxygen-carbon dioxide want and leading to anoxicemic crisis and death, if not prevented. The initial cause of these deficiencies is stasis of the bronchial exudate in the lung before operation and especially of exudate expressed during operation from the collapsed, diseased lung. Infection of this exudate by pneumococci, always present in the upper respiratory tract, increases its viscosity and renders it able to obstruct bronchi. Lobular, lobar or massive atelectasis and bronchopneumonia or pneumonia may develop, which further increase anoxemia by decreasing the respiratory field, by creating unaerated channels in the lung, and by increasing the dead space in this organ; the resulting shallow rapid breathing further increases anoxemia, causes massive elimination of carbon dioxide and produces acapnia. The latter still increases anoxemia, and, furthermore, it brings about loss of muscular tonus, which causes "peripheral vascular failure," peripheral blood stasis, decrease of the venous return to the heart, drop of blood pressure and "shock," and leads to more marked anoxemia and to an anoxicemic crisis. Deaths attributed to aspiration or tuberculous pneumonias, or to heart failure, cardiac dilatation or shock have really been at the last analysis anoxicemic deaths. Prevention of these complications could be possible only if this vicious circle could be stopped at its origin. Satisfied that this vicious circle begins during the operation, the author presents a method of administration of anesthesia which fulfils the following requirements: It keeps the respiratory ways patent, suppresses communication between the upper and the lower respiratory ways, allows an adequate ventilation of the lungs and, above all, renders possible repeated suction of the bronchi and elimination of their content before, during and after operation. A method of intratracheal insufflation anesthesia and bronchial suction was thus evolved. It has been used in eighty-four cases, representing 152 operations. In the other forty-nine cases (ninety-eight operations), ordinary mask anesthesia was used. All other conditions in these two groups having been equal, the latter group served as a control series, allowing a comparative study of this method. Although definite statements cannot yet be formulated, there is strong evidence in favor of the intratracheal anesthesia method combined with bronchial suction.

Journal of Urology, Baltimore

29: 503-630 (May) 1933

- *Multilocular Cysts of Kidney. E. L. Meland and W. F. Braasch, Rochester, Minn.—p. 505.
- Relation of Spina Bifida Occulta to Neuromuscular Dysfunction of Urinary Tract: Review of Six Cases Operated by Laminectomy. H. O. Mertz, Indianapolis.—p. 521.
- *Ultimate Results in Treatment of Carcinoma of Prostate by Radical Removal of Prostate, Vesical Neck and Seminal Vesicles. H. H. Young, Baltimore.—p. 531.
- Study of Carcinoma of Lower Urinary Tract. E. M. Watson, Buffalo.—p. 545.
- Injury of Urinary Bladder Following Irradiation of Uterus. A. L. Dean, Jr., New York.—p. 559.
- Primary Carcinoma of Ureter: Report of Case. W. H. Snyder, Jr., and B. S. Wood, Boston.—p. 577.
- Carcinoma of Female Urethra. V. S. Counsellor and Susanne J. Paterston, Rochester, Minn.—p. 587.
- Fatal Embolism Due to Distention of Bladder with Air. H. S. Jeck, New York.—p. 597.
- Rupture of Bladder: Report of Cases. B. E. Fillis, Hubbard Woods, Ill.—p. 601.
- Emergency Suprapubic Cystostomy. A. E. Goldstein, Baltimore.—p. 609.
- Epidermal Canals of Median Raphe: Further Study of Their Role When Infected. E. Rupel, Indianapolis.—p. 617.
- New Cystoscopic Table. I. R. Sisk, Madison, Wis.—p. 621.
- Leg Holder for Infants and Children During Cystoscopic Examination. M. F. Campbell, New York.—p. 627.

Multilocular Cysts of Kidney.—By the term "multilocular cyst of the kidney," Meland and Braasch refer to a collection of cysts within cysts. From a study of their six cases which they report, and also from the four cases reported in the literature, they conclude that the condition known as multilocular cyst is a rare although definite entity. Multilocular cysts are unilateral and localized. They may be easily confused with congenital polycystic kidney. Symptoms of multilocular cysts are due to pressure and obstruction. They may be either congenital or acquired. Multilocular cysts and solitary serous cysts have several features in common: (1) both are unilateral;

(2) the structure of the walls of the cysts is identical; (3) both involve similar, localized regions of the kidney, and (4) the symptoms of both depend on the size and situation of the cysts. The only point of similarity between polycystic kidney and multilocular cystic kidney is in the multiplicity of cystic cavities. The main point to remember is that polycystic disease is diffuse and bilateral, whereas multilocular cysts are localized and unilateral. In none of the cases of multilocular cyst were there present the systemic symptoms that accompany polycystic renal disease.

Treatment of Carcinoma of Prostate.—Young describes a radical operation for carcinoma of the prostate in which after exposure of the prostate through an inverted V incision by the usual division of the central tendon and recto-urethral muscle, the prostate is opened through the membranous urethra, the tractor introduced, the posterior surface of the prostate exposed, and the diagnosis confirmed by palpation (or, if necessary, incision or excision, and even microscopic study of the frozen section). When the diagnosis of carcinoma is confirmed, the radical operation is begun by the transverse division of the urethra, the isolation of the prostate from beneath the anterior transverse fascia, the exposure of the bladder near the prostate, and the resection of the cuff of the bladder with transverse division of the trigon about 1 cm. below the urethral orifices. The bladder is then pushed up, care being taken not to injure the uterers, and the ampullas and vesicles are isolated, clamped, divided and ligated high up. Careful hemostasis must be obtained. The use of the new high frequency coagulation machine is of great assistance, but the deep pedicle of the seminal vesicles should be ligated and all serious bleeding stopped. No difficulty is experienced in anastomosing the bladder to the membranous urethra, a portion of the anterior wall being used, and the remainder closed longitudinally. The Boomerang needle holder, with chromic catgut, is employed. A retained urethral catheter takes care of drainage. The deep angles of the wound are lightly packed with a long strip of iodoform gauze, which is brought out through one corner of the wound, the rest being closed by interrupted sutures of waxed silk, after treating the wound with a 1 or 2 per cent mercuriochrome solution. The author has performed this operation on forty-two patients. Of the twenty-seven patients who left the hospital after the radical operation over five years ago, eleven, or 40 per cent, lived or are living five years without recurrence. Of the twenty-seven patients who had been operated on more than five years ago, only four died during that five year period with recurrence. There are two patients who are well and living, one fourteen and one seventeen years after the operation.

Kentucky Medical Journal, Bowling Green

31: 173-222 (April) 1933

- The Montreal Meeting of the American College of Physicians. J. M. Kinsman, Louisville.—p. 174.
- Orbital Tumors: Case Report. J. H. Simpson, Louisville.—p. 177.
- Malpractice Suits. J. B. Lukins, Louisville.—p. 185.
- Report of Cases. S. G. Dabney, Louisville.—p. 193.
- Hydrophobia. G. G. Thornton, Lebanon.—p. 194.
- McWhorter Incision for Exposing the Kidney. M. Thompson, Louisville.—p. 195.
- Relation of Ear, Nose and Throat to General Infectious Disease. A. L. Bass, Louisville.—p. 197.
- Tumors of the Breast. L. Frank, Louisville.—p. 200.
- Report of Cases. O. Grant, Louisville.—p. 202.
- *Treatment of Postoperative Ileus. G. A. Hendon, Louisville.—p. 204.
- Allergy. A. E. Cohen, Louisville.—p. 206.
- Ruptured Petic Ulcer: Case Report. J. G. Sherrill, Louisville.—p. 213.
- Calcium Metabolism in Health and Disease. J. E. Winter, Louisville.—p. 216.

Treatment of Postoperative Ileus.—Hendon states that the causes of postoperative ileus are septic and traumatic. The treatment is prophylactic and therapeutic. The object of both is the suspension of function and the drainage of the intestinal canal. Fluid supply nutrition, essential mineral salts, maintenance of the visceral temperature and provision against loss of fluid by excessive perspiration are of importance. Prophylactic measures should be applied in all cases of diffuse peritonitis before the operation is begun and continued during its performance and subsequently. The most important of these is venoclysis. In acute cases, as soon as the patient reaches the operating room under local anesthesia, the cannula should be inserted and secured in a suitable vein and a 10 per cent solution of dextrose in Ringer's solution allowed to flow at the

rate of 40 drops per minute, if the patient is an adult. For children the rate is reduced according to age. Such therapeutic agents as seem indicated may be added to the solution. In chronic conditions this treatment should be begun several days before the operation, the highest possible point of resistance for the patient being secured gradually and the operation timed accordingly. After the abdomen has been opened one may resort to the internal hot water bag to conserve heat and furnish fluid, if necessary. This is accomplished in the following manner: The meso-appendix is clamped, cut and ligated. The tip of the appendix is cut off and a catheter of appropriate size is passed through the lumen of the appendix into the cecum and secured by two linen sutures passed through the wall of the appendix and tied. The entire colon is filled with water at a temperature of 120 F. and the catheter is clamped to prevent its escape, establishing a perfect source of heat and fluid inside the abdomen. At the conclusion of the operation, the appendix is brought out at the lower angle of the incision. The catheter is still left in situ to serve later for the various therapeutic purposes that may be suggested, such as introduction of fluid, nutritious enemas from above or purgation enemas, as circumstances may indicate. In about six days the appendix sloughs off, and the catheter may be allowed to remain or it may be withdrawn, as appears the more desirable. The author believes that the advantages of this operation are that it gets rid of the appendix after making it serve a useful purpose, that he has never seen a fistula persist after its use, and that it is easily and quickly performed. The second procedure in the prophylactic group is the enterostomy that was reported by the author in the *Annals of Surgery* in July 1932. The third plan of enterostomy is to open the cecum and insert a Pezzer catheter threaded on a stylet through the iliocecal opening.

Medical Bull. of Veterans' Adm., Washington. D. C.

9: 339-447 (April) 1933

- Residual Effects of Warfare Gases: Use of Mustard Gas: Report of Cases. H. L. Gilchrist and P. B. Matz.—p. 339.
Tuberculous Meningitis in Adults. J. C. George.—p. 391.
Importance of Good Clinical History in Diagnosis of Gastro-Intestinal Disease. J. A. Howell.—p. 397.
Privileged Communications. G. H. Crofton.—p. 400.

Medical Journal and Record, New York

137: 309-352 (April 19) 1933

- Rectal Disease. C. J. Drueck, Chicago.—p. 309.
Relation of Vitamin B Deficiency to Constipation. J. F. Montague, New York.—p. 314.
Orthopedic Considerations in Treatment of Arthritis. J. P. Stump, New York.—p. 317.
Banti's Disease (Splenic Anemia). M. M. Kline, Clearfield, Pa.—p. 318.
Intestinal Toxemia. A. Bassler, New York.—p. 320.

Michigan State M. Society Journal, Grand Rapids

32: 211-306 (April) 1933

- Some Important Factors of Postoperative Treatment. F. A. Collier, Ann Arbor.—p. 211.
Some Modern Extensions of Beaumont's Studies on Alexis St. Martin: II. Important Relations of Digestion and Health. W. B. Cannon, Boston.—p. 215.
*Surgical Treatment of Acute and Chronic Empyema. S. W. Harrington, Rochester, Minn.—p. 224.
Tuberculosis of the Skin. H. L. Keim, Detroit.—p. 228.
Mortality in Appendicitis: Statistical Study of Nine Hundred and Fifty-One Cases. C. R. Davis, Detroit.—p. 235.
*Chronic Hereditary Edema: Report of an Unusual Case. D. B. Davis, Grand Rapids.—p. 237.
Antirachitic Concentrates. D. J. Barnes, Detroit.—p. 242.
Abdominal Drainage. A. C. Henthorn, St. Johns.—p. 246.

Treatment of Empyema.—Harrington believes that the fundamental principle of the surgical treatment of acute empyema is surgical drainage, but the time, site and method of obtaining drainage depend on the indications in the individual case. The cardinal principles of any method of surgical treatment must be: (1) adequate drainage, (2) rapid sterilization of the diseased area, and (3) early obliteration of the cavity by expansion of the lung. Surgical intervention is best accomplished by instituting a type of drainage that maintains the negative intrathoracic pressure necessary for the proper function of the thoracic viscera and essential to expansion of the lung. The author recommends the so-called intercostal closed method of drainage because it is based on physiologic principles in that it preserves the intrathoracic negative pressure, promotes rapid expansion of the lung and permits adequate drainage of the toxic material

when properly instituted. In the surgical treatment of chronic empyema, the operative procedure should be selected that will restore the patient to normal health in the shortest time, with the least loss of structure and function, and with the minimal amount of discomfort and deformity. One type of treatment in these cases is that in which the fibrosed, thickened pleura, which is binding the collapsed lung to the thoracic wall, is removed by decortication, permitting the lung to expand. This type of treatment is usually applicable only to the subacute types of empyema. Another type of treatment, the collapse method, is the opposite in principle to the treatment of the acute condition, for the thoracic wall is brought down to meet the lung by removing the ribs, intercostal muscles, and thickened pleura over the empyema cavity. This type of operation is usually necessary when the condition has been present for from more than six months to one year. Before the more extensive operation is performed, all septic material should be removed from the empyema cavity, which should be reduced in size as much as possible by prolonged irrigation. The irrigations may be carried out through the sinus tract, or a dependent opening should be made.

Chronic Hereditary Edema.—Davis presents a case of chronic hereditary edema appearing in the stump of an amputated leg. The edema of the left leg followed an "acute attack" twenty-three years after amputation (trauma). It has been reported that the edema recedes slightly each night, though never entirely. In this case, however, on two different occasions the edema entirely disappeared after a period of bed rest for from four to five days. This observation would also tend to discount the surmise of Weber and others, when they mention lymphangitis and lymph node obstruction as possible causal factors. A local disturbance of venous origin has been suggested as a possible explanation of the edema, but this has never been substantiated by any clinical evidence. In the author's case, periarterial sympathectomy relieved neither the pain nor the edema. The pain was present only when the patient wore an artificial limb and so cannot be said to be directly related to the edema.

New England Journal of Medicine, Boston

208: 819-868 (April 20) 1933

- New Cases of Combined Pernicious Anemia and Diabetes. H. F. Root, Boston.—p. 819.
Pulmonary Cavitation and Principles of Surgical Treatment. R. H. Overholt, Boston.—p. 823.
Traumatic Arthritis. F. J. Cotton, Boston.—p. 829.
Primary Omental Torsion. R. H. Wallace and R. H. Miller, Boston.—p. 831.
Balzac's Account of Ambrose Paré and Last Illness of Francis the Second. W. P. Coes, Brookline, Mass.—p. 834.
Commencement Address. Sophie C. Nelson, Boston.—p. 838.
Report of the School of Nursing of the Peter Bent Brigham Hospital. Carrie M. Hall, Boston.—p. 841.
Progress in Pediatrics. J. L. Morse, Boston.—p. 843.

208: 869-920 (April 27) 1933

- Report of Case of Calcified Hydrocele Stimulating Tumor. C. J. E. Kickham, Boston.—p. 869.
Value of Cystometry. R. Chute, Boston.—p. 869.
Use of Cortin Following Removal of Large Adrenal Tumor: Case Report. G. C. Prather, Boston.—p. 872.
Renal Tumor with Unusual Pyelogram: Case Report. A. Riley, Boston.—p. 877.
Endocrine Influence on Male Sex Organs. W. E. Lower, Cleveland.—p. 878.
Bicornate Uterus: Report of Unusual Case. G. A. Moore, Brockton, Mass.—p. 887.
Hematomericardium: Case Report. E. B. Benedict and C. M. Jones, Boston.—p. 891.
Trends and Programs in Medical Care. M. M. Davis, Chicago.—p. 892.
Progress of Gastro-Enterology in 1932. A. E. Austin, Boston.—p. 898.

Ohio State Medical Journal, Columbus

29: 209-272 (April 1) 1933

- Plea for Early Diagnosis and Surgical Treatment of Acute Gallbladder Disease. M. M. Zininger, Cincinnati.—p. 229.
Clinical Consideration of Secondary Anemias. G. I. Nelson, Columbus.—p. 232.
Subdural Abscess: Its Relation to Sterile Purulent Leptomenigitis. W. J. Gardner, Cleveland.—p. 235.
Encephalitis. H. D. McIntyre, Cincinnati.—p. 239.
*Pneumococcal Meningitis Combined with Streptococcus and Diplococcus Catarrhalis. S. H. Ashmun, Dayton.—p. 243.

Pneumococcal Meningitis.—Ashmun presents the histories of three patients who recovered, two fatal cases, and the post-mortem observations in a more recent case of pneumococcal

meningitis that emphasize the advantages of cistern and ventricular puncture. These observations have led him to see the necessity of the early differential bacteriologic diagnosis of the various types of meningitis; the prompt use of ethylhydrocupreine hydrochloride intraspinally, when indicated, combined with the intravenous use of acriflavine base; both spinal and cistern drainage, if spinal drainage is not wholly adequate, and the importance of changing the prognosis from one entirely hopeless to one in which there is a fair chance of recovery.

Oklahoma State Medical Assn. Journal, Muskogee

26: 103-142 (April) 1933.

- Tetany. H. T. Ballantine, Muskogee.—p. 103.
Endocrine Therapy in Gynecologic Practice. F. W. Ewing, Muskogee.—p. 105.
*Cancer of Uterus: Its Prevention, Diagnosis by Biopsy and Principle of Treatment. W. Long, Oklahoma City.—p. 108.
Cholelithiasis. J. B. Oldham, Sr., Muskogee.—p. 116.
Medical Gynecology. R. J. Crossen, St. Louis.—p. 120.
Public Health and Taxation. C. M. Pearce, McAlester.—p. 128.

Cancer of Uterus.—Long believes that cervical amputation is the most perfect available means of preventing cervical cancer and that this procedure should be more widely employed than is the present custom. Cervical reparative operations, including trachelorrhaphy, partial amputation and cauterization, offer effective, though not perfect, prophylaxis against cervical cancer. Clinically evident and clinically questionable carcinoma of the cervix must be distinguished in deciding when to do a biopsy. In the clinically evident cases, biopsy should not be done prior to treatment. In clinically questionable cases it should be done at once. In a clinically questionable carcinoma, too great a sense of security is not to be derived from a negative biopsy report. Elderly women who have vaginal bleeding but in whom it is impossible to discover a source for the bleeding in the cervix or vagina, and in whom an enlarged uterus is found, have a presumptive diagnosis of a malignant condition of the uterus. In these elderly patients it is thought that elimination of preceding curettage is justifiable, because of the resultant shortened anesthesia and procedure. The removal of the entire cancer of the uterus is decidedly the preferred method of treatment. This is possible in the majority of instances of adenocarcinoma of the fundus uteri, because the tumor grows and metastasizes slowly, and because the anatomy is such as to permit the necessary surgical procedure. Removal of the entire growth is unfortunately rarely possible in carcinoma of the cervix, and radiotherapy is employed instead of surgery. This is due to the fact that the tumor grows rapidly and metastasizes early and the fact that the anatomic location in the midst of the urinary and intestinal tracts makes the necessary surgical procedure, even when possible, extremely hazardous.

Psychiatric Quarterly, Albany, N. Y.

7: 195-352 (April) 1933

- Clinical Consideration of Mental Deficiency. H. W. Potter, New York.—p. 195.
Obsessional Phenomena in Schizoid Individuals in Relation to Eventual Schizophrenia. A. Gordon, Philadelphia.—p. 203.
Some Psychiatric Aspects of Suicide. G. R. Jameison and J. H. Wall, White Plains, N. Y.—p. 211.
Family History of Huntington's Chorea. W. H. Veeder, Rochester, N. Y.—p. 230.
Light Therapy: Photochemical and Photothermal Radiation. D. Corcoran, Queens Village, N. Y.—p. 234.
Diathermy in Treatment of General Paralysis. H. J. Worthing, Ogdensburg, N. Y.—p. 245.
Treatment of Hypertension with Potassium Sulphocyanate. J. F. McNeill, Beacon, N. Y.—p. 254.
Fecal Flora in Catatonic Dementia Praecox. Barbara McGinn, Mary E. Raney and N. Kopeloff, New York.—p. 260.
Experimental Toxic Encephalomyelopathy: Diffuse Sclerosis Following Subcutaneous Injections of Potassium Cyanide. A. Ferraro, New York.—p. 267.
State Hospital Diets. L. M. Farrington, Albany, N. Y.—p. 284.
Preparation of Nurses for Community Service. Clara Quereau, Albany, N. Y.—p. 294.

Public Health Reports, Washington, D. C.

48: 437-470 (April 28) 1933

- Changes in Teeth of White Rats Given Water from Mottled Enamel Area Compared with Those Produced by Water Containing Sodium Fluoride. W. H. Sebrell, H. T. Dean, E. Elvove and R. P. Breaux.—p. 437.
Observations on Vitamin A Deficiency in Dogs. A. M. Stimson and O. F. Hedley.—p. 445.

48: 471-497 (May 5) 1933

- Trends in Diphtheria Mortality. E. A. Lane.—p. 473.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

S: 255-374 (March) 1933

- Diseases of Liver and Spleen from Medical Aspects. F. M. Hanger, New York.—p. 255.
Elephantiasis Tropicum. J. Suárez, San Juan.—p. 287.
Clinical Aspects of Uncinariasis. R. M. Suárez, San Juan.—p. 299.

South Carolina Medical Assn. Journal, Greenville

29: 79-111 (April) 1933

- Vincent's Pneumonia: Case Report. C. Evatt, Greenville.—p. 90.
*Purpura Hemorrhagica: Treatment of Case with Intramuscular Injections of Whole Blood. A. E. Poliakoff and G. A. Neuffer, Abbeville.—p. 91.

Purpura Hemorrhagica.—Poliakoff and Neuffer report the case of a boy, aged 5, suffering from purpura hemorrhagica of the primary thrombocytopenic type, who improved with intramuscular injections of whole unmatched blood. The authors were enabled to do but one platelet count and that after the patient had received six injections of whole blood. The platelet count was 90,000. The coagulation time was within normal limits. On two occasions the bleeding time was three and one-half minutes. It was not taken when the patient had a severe nosebleed. Since receiving the blood, the patient has become stronger. Only three new blue spots have appeared, each one of these at a different time. The patient has gained weight and improved generally.

Southern Medical Journal, Birmingham, Ala.

26: 305-378 (April) 1933

- Pioneers in Public Health in Southern United States. W. S. Leathers, Nashville, Tenn.—p. 305.
Blastomycosis of Bone. D. B. Harding and C. C. Garr, Lexington, Ky.—p. 315.
*Tannic Acid Treatment of Burns. J. D. Martin, Jr., Atlanta, Ga.—p. 321.
Carcinoma of Bulbar Conjunctiva. K. W. Cosgrove, Little Rock, Ark.—p. 326.
Operative and Nonoperative Glaucoma. J. W. Jervy, Greenville, S. C.—p. 330.
Spinal Cord Injuries. R. E. Semmes, Memphis, Tenn.—p. 334.
Hersheimer Reaction: An Aid to Treatment. C. P. Bondurant, Oklahoma City.—p. 339.
Peptic Ulcer: Review of Five Hundred and Fifteen Private Cases. L. C. Sanders, Memphis, Tenn.—p. 343.
*Prevention and Treatment of Postoperative Intestinal Incompetence (Paralytic Ileus). L. D. Long, Oklahoma City.—p. 350.
Renal Trauma. C. M. Simpson, Temple, Texas.—p. 353.
Chronic Pseudomembranous Trigonitis. L. Orr, Orlando, Fla.—p. 359.
Effect of Bence-Jones Excretion on Kidneys: Preliminary Report. W. D. Forbus, W. A. Perlzweig and J. P. Burwell, Jr., Durham, N. C.—p. 361.
Obstetric Complications Treated in the Home by the General Practitioner: Hyperemesis Gravidarum, Eclampsia, Postpartum Hemorrhage. J. E. Green, Laurel, Miss.—p. 363.
The Southern White Clinic Child: Study of Five Hundred Cases, with Special Reference to Diarrhea and Otitis Media. J. Yampolsky, Atlanta, Ga.—p. 366.

Tannic Acid Treatment of Burns.—Martin points out that the tannic acid method of treatment in his clinic has not given the marked reduction in mortality that is reported in other clinics. However, the morbidity has been reduced. The stay in the hospital is shortened in almost every instance. The complications are fewer, particularly the respiratory infections and general sepsis, and there is a lessening of scar formation, owing to protection of the epithelium and the small amount of infection. Other advantages of tannic acid treatment during the first few hours are that it lessens the pain and prevents loss of the vital body fluids which escape from the wound surface. Epithelization is hastened and is completed in shallow burns by the time the coagulum is removed. The burns are much cleaner by this method than those treated with wet dressings and some of the oily preparations. The necessity of frequent and painful dressings is removed, which is an important economic factor. Tannic acid alone is not sufficient in caring for burns, but it is a great aid when used in combination with measures used in combating the toxic substance developed following the injury. Until there is a proper understanding of the cause of these changes, the best results will be obtained from tannic acid treatment. The author uses an aqueous solution of from 2.5 to 5 per cent tannic acid, applying it to the surface by means of an ordinary atomizer every thirty minutes until a good tannate is formed, which usually requires from six to eighteen hours. The aqueous solution is used on and round the face, but it must be applied carefully, as there is some

danger of injury to the cornea. He advocates the use of tannic acid jelly on the face to minimize this danger.

Postoperative Intestinal Incompetence.—Long believes that anything which interferes with the normal function of the intestinal musculature, or that tends to do so, may be a predisposing factor in the production of incompetence. Among these are preoperative debility from any cause, preoperative purgation, general anesthesia, trauma of surgical operation, early postoperative feeding, postoperative catharsis, early or stimulating postoperative enemas, neglect to furnish water, chlorides and carbohydrates, and neglect to keep the patient comfortable after the operation. The preoperative improvement of the patient's general condition, when possible, is an obvious elementary requirement. The symptoms of postoperative intestinal incompetence are increasing abdominal discomfort with progressive distention, but often without any acute pain. There is obstipation and no flatus is passed. There is nausea, which for a considerable time may not be followed by vomiting. The pulse rate is increased. The stethoscope reveals a still abdomen as contrasted with the audible vigorous, rhythmic peristalsis of mechanical obstruction. The roentgenogram is of considerable aid in differentiating incompetence from mechanical obstruction. Multiple fluid gas levels are characteristic of localized loop distention, which is strongly indicative of mechanical obstruction. The treatment of postoperative intestinal incompetence may be divided under four heads: (1) decompression of the upper intestinal tract to rid the intestine of gas and toxic substances; (2) physiologic rest for the intestinal tract; (3) ample water supply, chlorides and carbohydrates, and (4) assistance to the intestinal musculature in its return to competence; that is, the ability to carry on normal propulsive movement. The assistance to the intestinal musculature in its return to normal competence is not immediately necessary but should await the good results obtained by decompression, physiologic rest and the administration of chlorides and water.

Surgery, Gynecology and Obstetrics, Chicago

56:847-974 (May) 1933

- Differential Diagnosis Between Certain Types of Infectious Gangrene of Skin, with Particular Reference to Hemolytic Streptococcus Gangrene and Bacterial Synergistic Gangrene. F. L. Meleney, New York.—p. 847.
- *Regenerative Capacity of Extrahepatic Biliary Tracts: Clinical and Experimental Study. G. Halperin, Chicago.—p. 868.
- Carcinoma of Esophagus. W. L. Watson, New York.—p. 884.
- *Diverticulum of Urinary Bladder: Analysis of One Hundred Cases. A. A. Kutzmann, Los Angeles.—p. 898.
- Hypertrophic Intestinal Tuberculosis. A. A. Davis, Manchester, England.—p. 907.
- Excretion of Ovary Stimulating Hormone in Urine During Pregnancy: Its Relation to Urinary Output. D. P. Murphy, Philadelphia.—p. 914.
- Profound Blood Pressure Fall with Bradycardia: Normal Pulse Rate in Surgical Procedures. Huberta M. Livingstone, S. Elizabeth McFetridge and Robbie Brunner, Chicago.—p. 917.
- *Resection of the Stomach: End-Results in Two Thousand Four Hundred Cases. E. C. Emerson, St. Paul, and L. Czirer, Budapest, Hungary.—p. 926.
- Ovarian Tumors of Thyroid Tissue. J. C. Masson and Selma C. Mueller, Rochester, Minn.—p. 931.
- Compound Intra-Uterine and Extra-Uterine (Lithopedion) Pregnancy. P. B. Bland, L. Goldstein and W. W. Bolton, Philadelphia.—p. 939.
- Electrocoagulation of Melanoma and Its Dangers. P. D. Amadon, Monroe, Mich.—p. 943.
- Continuous Figure-of-Eight Suture for Muscular and Peritoneal Approximation in Cesarean Section. F. C. Irving, Boston.—p. 947.
- Branchial and Thyroglossal Duct Cysts and Fistulas in Children. C. J. Baumgartner, Los Angeles.—p. 948.
- Reactions After Intravenous Infusions: Further Report on Their Elimination. L. Rademaker, Philadelphia.—p. 956.
- Postoperative Suprapubic Fistula: Analysis of Causes. E. Beer, New York.—p. 959.

Regenerative Capacity of Extrahepatic Biliary Tracts.

—Halperin discusses the causes leading to stenosis of the extrahepatic bile ducts and adduces clinical evidence regarding their regenerative capacity. From the analysis of the results of various methods of reconstruction, it is apparent that the stumbling block to success is the question of adequate blood supply to the new channel. That is particularly true of the method of fistula implantation and also of flap methods. The method of bridging a gap with a rubber tube was given particular consideration. Clinical evidence regarding its efficacy was found to be contradictory. Adherents of the method concluded that success was explainable on the basis of extraordinary regenerative capacity of ductal epithelium. The epithelium, they

believed, grew along the prosthesis and lined the new channel. The question of the regenerative capacity of ductal epithelium was studied experimentally. It was found that epithelium will proliferate and fill longitudinal defects, even if extensive, provided there is no excessive inflammatory reaction at the site of repair. The question of blood supply to the epithelium was again found to be the determining factor. It was found that epithelium will not grow along a tube and will not regenerate a transverse gap. This experience coincides with the post-mortem evidence of clinical cases. The importance of adhesions as a factor in a favorable outcome was emphasized. This idea receives its support from the observations of Cahen, Lahey, Museneck, and the author's experimental work. There is no one satisfactory method, at the present time, of dealing successfully with cases of extensive bile duct obliteration in which direct anastomosis is not possible.

Diverticulum of Urinary Bladder.—From a study of 100 cases, Kutzmann states that diverticulum of the urinary bladder is a disease which affects the male chiefly and occurs for the most part in later life during the prostatic age. It is nearly always associated with an obstructive condition, such as prostatism or urethral stricture. The incidence of diverticulum is as follows: in the urologic cases in general, 1.2 per cent; in benign hypertrophies, 9.1 per cent; in contractures and median bar obstruction, 16.8 per cent; in urethral strictures necessitating operation, 14.3 per cent; and in carcinoma of the prostate, 1.1 per cent. No definite clinical symptomatology is noted except that possibly, if a lower urinary tract obstruction with infection is present, there is an accentuation of the characteristic symptoms of the associated condition. Diverticulum of the urinary bladder is the result of both congenital and acquired anatomic factors. Anatomically, the author observed that the walls of the diverticulum showed fibrous tissue with permeation of chronic inflammatory elements. The diverticula were lined with smooth, glistening membrane; histologically, they showed the flattened type of epithelium. He believes that diverticulum of the urinary bladder is treated most satisfactorily by the correction of the obstructing factors, only such diverticula being individually treated as may be of the retention type or of a large size. This method of procedure will give gratifying relief from symptoms that have been intense and of long duration.

Resection of the Stomach.—Emerson and Czirer present the results of 2,400 consecutive resections of the stomach. To remove ulcers, 1,500 resections were performed and 900 resections were done for malignant conditions. Resection of the stomach is indicated in the presence of stenosis, perforation of the ulcer and recurrent profuse bleeding, and for removal of a calloused ulcer remaining after dietary treatment. Of the ulcer patients operated on, the ulcer incidence is over three times greater in the male than in the female (78.7 per cent men, 21.3 per cent women). The most common site of the lesion was the pylorus (34.9 per cent) and the duodenum (32.3 per cent). In 15.9 per cent of the patients the lesions were on the lesser curvature; in 12.3 per cent there was an associated stenosis; and in 4.1 per cent there were multiple lesions. As to the age incidence, patients between 30 and 40 years were the ones most commonly affected, making 29.9 per cent of the total; 27.3 per cent were between 40 and 50; 17.9 per cent between 20 and 30; 17.2 per cent between 50 and 60; 6.3 per cent more than 60, and the smallest percentage, 1.4 per cent, were between 10 and 20. The fundamental principles of the method used by the authors are: (1) application of the sewing clamp to the stomach after ligation of the vessels; (2) incision between two rows of metal sutures preventing the escape of any gastric content; (3) removal of the stomach and a portion of the duodenum (containing the ulcer when possible); (4) closure of the duodenum, continuous catgut for the muscularis and mucosa, and interrupted sutures for the serosa, and (5) anastomosis between the stomach and the jejunum, the lower corner of the stomach being resected, the suture line being fixed below and through the mesocolon. The operation is performed under local anesthesia, usually splanchnic, though spinal and infiltration methods have also been used. The mortality for all cases following gastric resection was 7.8 per cent, and following gastroenterostomy 3.5 per cent. Since 1923, the corner anastomosis of Verebely has been exclusively followed, and the mortality has been lowered to 4.8 per cent. This is inclusive for all resec-

tions and for carcinoma, perforated ulcers, and so on. The mortality for peptic ulcer alone was 4.5 per cent following gastro-enterostomy, 18 per cent after exclusion of pylorus and gastro-enterostomy, and now 0.5 per cent after resection with the use of the sewing clamp and corner anastomosis. After palliative operations (exclusion with gastro-enterostomy, and so on), the authors obtained good results in 49 per cent, fair results in 33 per cent, and bad results in 18 per cent. After resection with corner anastomosis according to the method of Verheij, good results were obtained in 90 per cent, fair results in 8.5 per cent and poor results in 1.5 per cent.

United States Naval Med. Bulletin, Washington, D. C. 31: 103-240 (April) 1933

- Second Psychologic Study Made on Candidates for Aviation Training. C. G. DeFoney.—p. 103.
*Study of Convulsive Seizures Caused by Breathing Oxygen at High Pressures. C. W. Shilling and B. H. Adams.—p. 112.
Trend in Anesthesia and Its Relation to Naval Medical Department Personnel Requirements. K. C. Melhorn.—p. 121.
Pulpless Tooth: Local and Constitutional Problem. H. R. Delaney.—p. 144.
Speed of Visual Perception. P. Richmond and E. C. Ebert.—p. 150.
Priapism: Report of Case. P. T. Crosby and R. P. Parsons.—p. 153.
Repeated Fracture of Skull. L. W. Johnson.—p. 156.
Cancer Service at the United States Naval Hospital, Brooklyn, N. Y., with Data for the Fiscal Year 1932. C. W. Stelle.—p. 157.
Report of Two Thousand Four Hundred and Thirty-Four Spinal Anesthetics, with Especial Reference to Postoperative Pulmonary Complications in One Thousand Cases. F. R. Moore.—p. 160.
Treatment and Prevention of Heat Cramps. W. E. Eaton.—p. 162.
Simple Traction Method for Treatment of Uncomplicated Fractures of Femur. J. W. Shumate.—p. 164.

Convulsive Seizures Caused by Breathing Oxygen at High Pressures.—Shilling and Adams determined the acute effects of high oxygen pressure on rats, guinea-pigs, rabbits and cats, with reference to the production of convulsions and lung damage. They present data showing that no convulsions develop within a two hour exposure to oxygen pressures of 35 pounds gage or below, but as the pressure is increased the number of animals developing convulsions within the two hour period increases until all species exposed to 55 or 60 pounds gage develop convulsions. As the pressures increase, the time of exposure required to produce convulsions becomes less. Lung damage, which varied from mild congestion to severe hemorrhagic edema and acute hemorrhage, was found to be associated with the convulsive seizures, but the two were not interrelated; that is, one might have severe changes in the lungs and no convulsions and vice versa.

Western J. Surg., Obst. & Gynecology, Portland, Ore. 41: 183-242 (April) 1933

- Properitoneal Hernia and Mass Reduction of Strangulated Hernia. V. St. John, Los Angeles.—p. 183.
Cirrhosis of the Liver: Report of Three Cases Treated Surgically. S. R. Maxeiner, Minneapolis.—p. 191.
Jejunal Ulcer. F. G. Connell, Oshkosh, Wis.—p. 197.
Is Skin Grafting with Isografts or Homografts Practicable? E. C. Padgett, Kansas City, Mo.—p. 205.
Gangrene of the Omentum: Case with Removal of Entire Omentum and Recovery. D. C. Straus, Chicago.—p. 213.
*Exact Technic for Circumcision. A. G. Bettman, Portland, Ore.—p. 220.

Technic for Circumcision.—Bettman outlines a technic for circumcision which provides a simple means of locating exactly the desired line for amputating the redundant prepuce and of so holding that line that the operation may be carried out exactly as planned. He locates and picks up with three equidistant hemostats the mucocutaneous junction of the prepuce, separating adhesions when present and making a dorsal slit if necessary. He determines the site of amputation on both mucous membrane and skin surfaces and then with ordinary towel forceps he claps the prepuce just back of the previously determined line of amputation. He places one pair of towel forceps on the dorsal aspect and two on the lateral aspects. He then makes a dorsal slit until it reaches almost to the prongs of the dorsal towel forceps. He continues the incision at right angles to the dorsal slit on both sides, always cutting distally to the towel forceps, so that when the free portion of the prepuce is removed the forceps are still in place. The frenum is handled as in any other operation. This technic is applicable to either local or general anesthesia, whether hemostasis is controlled by a rubber band around the shaft or by picking up the vessels with hemostats.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London 45: 179-224 (May) 1933

- *Comparison of Various Meinicke Methods. J. E. Nicole.—p. 179.
Syphilitic Destruction of the Scalp. D. E. H. Cleveland.—p. 187.
*Treatment of Sycosis and Allied Follicular Infections of Skin. J. Avit-Scott.—p. 190.
A Wood's Glass Diagnosis Lamp for Twenty-Five Shillings. J. H. T. Davies.—p. 193.

Comparison of Various Meinicke Methods.—Nicole states that, as an exclusion test on finger blood applied in more than 2,000 cases, the standard micro-Meinicke test gave a sensitivity of about 94 per cent and a relative specificity of approximately 98 per cent, showing itself to be superior to other tests in respect of sensitivity. In a series of 300 cases in which were included 163 syphilitic patients all of whom were examined by the same ten tests, the various degrees of sensitivity obtained were as follows: macro-Meinicke clarification reaction II, respectively absolute and relative sensitivity, 87.5 and 96.9 per cent; indirect micro-Meinicke clarification reaction II, 93.8 and 97.5 per cent; direct micro-Meinicke clarification reaction II, 95 and 98.7 per cent; original Meinicke clarification reaction Z, 90 and 93.7 per cent; Müller's conglobation reaction II, 86.3 and 95 per cent; Müller's conglobation reaction Z, 88.5 and 96.3 per cent; the Kahn routine test, 85 and 91.9 per cent; the modified Sachs-Georgi reaction, 80.6 and 87.5 per cent; Sachs-Witebsky reaction, 61.9 and 75 per cent, and Wyler's first modification of the Wassermann reaction, 70 and 76.9 per cent. In the controlled cases (500) the macro test proved nearly as sensitive as the micro test but no more specific, though its sensitivity can be improved by reading it as an indirect micro test. No great improvement resulted from the use of a strong extract, though it seems probable that the method of coloring this extract leads to less doubtful reactions. On spinal fluid the Meinicke clarification reaction tests are less good than others, though it is possible that with a little more experimentation the macro test could be rendered distinctly useful. In the new technics it would appear that a marked, though not complete, clarification can rightly be interpreted as a positive result.

Treatment of Follicular Infections of Skin.—For sycosis and allied follicular infections of the skin, Avit-Scott recommends the application of a 75 per cent solution of sulphonated bitumen every night, after the small pustular lesions have been punctured with a clean needle and washed with a 10 per cent sulphonated bitumen soap, the soap being removed by washing the affected parts with clean water and drying them with a towel. The application dries in a few minutes and washes off in plain water. This treatment must not be used for recent, acute, partly eczematous, follicular infections of the beard and moustache regions, as it makes them worse and causes a good deal of weeping: from 12 to 20 grains (0.8 to 13 Gm.) of zinc sulphate to an 8 ounce bottle of calamine lotion is best for these parts. In the case of patients with sycosis who develop boils, in addition to the foregoing treatment the author gives an injection of from 2 to 3 cc. of blood just under the skin once a week.

British Journal of Ophthalmology, London 17: 257-320 (May) 1933

- Some Aspects of Vascular Change in Fundus Oculi and of Retinal Arteriosclerosis in Particular. P. J. Evans.—p. 257.
*Series of Thirty-One Cases of Retinal Detachment Treated by Diathermy. E. F. King.—p. 287.
Histologic Appearances of an Eye Successfully Treated by Diathermy for Retinal Detachment: Fatal Termination from Pulmonary Thrombosis on Nineteenth Day After Operation. H. B. Stallard.—p. 294.
Mydriatic Synergy: Note on Use of Mydriatics by Subconjunctival Injection. F. Flynn.—p. 298.

Retinal Detachment Treated by Diathermy.—King treated thirty-one cases of retinal detachment by diathermy. He believes that the following conclusions are justified: 1. The diathermy method of cauterization for the treatment of retinal detachment is preferable to the thermocautery used by Gonin or the solid caustic potash used by Guist. Further, the technical difficulties are considerably less than in the latter operation.

2. Cases in which no hole can be found and those in which a previous operation for detachment, of any type, has been done, offer small hope of success. 3. The age of the patient is of small importance but the prognosis is much less favorable when the symptoms of detachment are of long standing. 4. Almost all patients showing inflammatory signs, postcortical lens changes, gross vitreous opacities and hypotension do badly, while in those with a relatively clear vitreous, discrete hole or holes and a normal tension the prognosis is favorable. Of the thirty-one patients, eighteen were cured. Eleven of these left the hospital with no visible detachment; in seven there was seen, around the cauterized area, a certain amount of residual detachment due, no doubt, to local swelling of, and possibly exudate from, the choroid. In no patient has an increase of this local detachment been noted at subsequent examinations. In most of the cured patients the field to a one degree object at one-third meter was full or showed only a small loss corresponding to the site of operation. The improvement in central vision was variable; if the macula had been detached, from counting fingers, vision of 6/60 or 3/36 was usually obtained, while an increase of one or two lines on Snellen's type was general in the patients in whom the macula was still attached.

British Journal of Physical Medicine, London

8: 1-16 (May) 1933

- Physiotherapy in Circulatory Disorders. E. Freund.—p. 3.
Actinotherapy in Urogenital Tuberculosis. A. Legueu, J. Saidman and S. Avram.—p. 6.
Abdominal Manual Treatment for Peritoneal Adhesions in General Abdominal Cavity. E. Cyriax.—p. 8.
Reduction of Weight by Dehydration. M. Porges.—p. 9.

British Journal of Radiology, London

6: 257-320 (May) 1933

- Congenital Diseases of Heart. P. Kerley.—p. 257.
Application of Thin-Film Resistances to Measurement of Voltage and Power in X-Ray Tubes. G. W. Bowdler.—p. 266.
New Electroscope for Hospital Use. L. G. Grimmett.—p. 279.
Relief Study of Stomach and Colon. T. D. Overend.—p. 288.

British Journal of Tuberculosis, London

27: 51-98 (April) 1933

- Latest Developments of Occupational Therapy in Surgical Tuberculosis. A. Rollier.—p. 51.
Open-Air Schools for Town Children. R. Ffennell.—p. 58.
Chronic Inflammatory Conditions Simulating Pulmonary Tuberculosis in Young Subjects. G. Jessel.—p. 69.
Present-Day Problems of Tuberculosis. A. Trimble.—p. 74.

British Medical Journal, London

1: 731-770 (April 29) 1933

- Principles of Treatment in Pulmonary Tuberculosis. L. S. T. Burrell.—p. 731.
*Blood Phosphatase and van den Bergh Reaction in Differentiation of Several Types of Jaundice. W. M. Roberts.—p. 734.
*Relation of Excessive Carbohydrate Ingestion to Catarrhs and Other Diseases. J. H. P. Paton.—p. 738.
Pathologic Changes in Acute Pancreatitis Seen During Life. S. Howard.—p. 740.
Total Hysterectomy for Nonmalignant Conditions. R. Worrall.—p. 741.
Maternity and Child Welfare Services in Their Relation to Public Health. D. Paterson.—p. 742.

Blood Phosphatase and van den Bergh Reaction in Jaundice.—Roberts criticizes the current description of the direct and biphasic van den Bergh reactions. He presents the results of the reaction in a series of cases of jaundice as evidence that the reaction fails to differentiate obstructive from toxic and catarrhal jaundice. The obstructive nature of a jaundice can be recognized by the increased phosphatase activity of the blood, which occurs in this type alone. Although the phosphatase figure is often alone sufficient to distinguish the obstructive nature of a jaundice, it is an advantage to carry out a quantitative bilirubin estimation at the same time, in order to obtain a numerical expression of the jaundice to compare with the phosphatase figure. The differentiation depends on the relation between this content and the phosphatase activity. The results obtained in a series of fifty-two consecutive cases demonstrate that, by the method described, toxic, infective and catarrhal jaundice may be readily distinguished from jaundice of the obstructive type. The relation between the phosphatase activity of the blood and its bilirubin content is discussed. A modification of the modern theory of jaundice and the van den Bergh reaction is proposed.

Excessive Carbohydrate Ingestion and Catarrhs.—Paton states that the incidence of cases of catarrhal illness of more than seven days' duration was greatly reduced during the war. In a boarding school of about 350 girls he found the consumption of sucrose to be at the rate of more than 2 pounds a week per person. Individual houses showed variations between 1½ pounds and 2½ pounds. He suggests that, for the term when these figures were obtained, the house with the lowest sucrose consumption had a catarrhal rate of 5.5 per cent, while the house with the highest sucrose consumption had a catarrhal rate of 24.6 per cent. The rate in the other houses was roughly proportional to the sugar intake. It may be objected that, since the utilizable product of all carbohydrates is dextrose, the case against sucrose in particular falls to the ground. There are many indications that sucrose may be harmful when consumed to excess: 1. It is a pure chemical substance devoid of all accessory food factors, such as vitamins and salts, with which it is associated in the vegetables from which it is extracted. 2. If absorbed unchanged it is excreted by the kidney; but it is not impossible that it exerts a toxic effect in its passage through the blood. 3. Its digestion and absorption (as invert sucrose) are attained with much greater rapidity than is the case with starch. As MacLeod, Ramsay and others have pointed out, velocity of dextrose absorption is of even more importance than weight. 4. The levulose fraction of invert sucrose may, if it reaches the systemic blood, exercise a toxic effect. But apart from that, it is evident that the absorption of 50 pounds of levulose annually (the product of 100 pounds of sucrose), which is greatly in excess of the amount derived from all natural foods, must throw an unwonted strain on hepatic activity. 5. So far as sucrose displaces natural food-stuffs, vitamin and other deficiency must result. The author concludes that the restricted use of sugar should result in an improvement in health as regards catarrhal illness.

1: 771-810 (May 6) 1933

- *Indications for Surgical Treatment in Peptic Ulcer. D. P. D. Wilkie.—p. 771.
Treatment of Arthritis. C. W. Buckley.—p. 774.
*High Gastric Ulcer: Suggested Operation. C. A. Wells.—p. 778.
*Repair of Skull Defects by a New Pedicle Bone-Graft Operation. R. W. Jones.—p. 780.
Pedunculated Thrombus Occluding Left Auricle. Barbara Woodhead.—p. 781.

Surgical Treatment in Peptic Ulcer.—Wilkie points out that peptic ulcer requires constitutional rather than local treatment. Surgery must supplement and not replace medicine in its treatment. Stenosis, intractability, recurring hemorrhage and associated abdominal lesions are indications for surgical intervention. For gastric ulcer, ablation of the ulcer, preferably by partial gastrectomy, is desirable in view of potential malignant growths. For duodenal ulcer with stenosis and low gastric acidity, posterior gastrojejunostomy gives uniformly good results. For recurring duodenal ulcer, with high acidity and no stenosis, gastroduodenostomy should be preferred. Associated duodenal ileus should be relieved by duodenojejunostomy. Lesions in the appendix and gallbladder should be looked for and, if found, dealt with radically. Recurring hemorrhage in a male patient may call for immediate operation, preceded and followed by transfusion. After-care with a rigid control of acidity is essential.

High Gastric Ulcer.—Wells introduces an operation for high and difficult gastric ulcer. He proposes to perform a standardized Polya-Moynihan partial gastrectomy below the level of the ulcer. The theoretical consequences of this operation are that: (1) mechanically, the ulcer is left in a portion of the stomach in which the food lies for a short time, and (2) chemically, much acid-bearing fundus mucosa is removed and the alkaline jejunal content is brought into direct contact with the ulcer. The author performed this operation on four patients presenting really high ulcers, which could not be removed except with the sacrifice of almost all the stomach and at great risk to the patient. From the roentgenograms it is apparent that rapid and satisfactory healing of the ulcer is promoted by this operation without stenosis of the opening into the small intestine. The remaining stomach empties as speedily as is usual in partial gastrectomy, and the postoperative roentgenograms do not suggest that any variation from the classic procedure has been made. The author's four patients

have spoken for themselves in so enthusiastic a fashion as to render any amplification of their testimony unnecessary. These practical considerations would seem to outweigh the manifest theoretical objections that could be raised and to justify the putting forward of this procedure as a serious proposal in the surgical treatment of the most difficult type of gastric ulcer.

Repair of Skull Defects by Bone-Graft Operation.—Jones describes an operation for the repair of defects in the vault of the skull in which a flap of scalp is turned back with its base over the temporal region, exposing the defect in the skull and a corresponding area of uninjured bone either behind or in front of the defect. The incision is planned in such a way that any puckered, broad or adherent scar remaining from the emergency operation is excised. The greater part of the scar will subsequently be covered with hair, and in frontal injuries the lower incision should follow the line of the eyebrow. The gap in the bone is defined, the pericranium removed round its margin, and the exposed bone freshened and rawed. A flap of pericranium, equal in size and shape to the area that has been cleared, is marked out, and left attached by a pedicle to the temporal region. The pericranium is raised for a third of an inch round the whole circumference of the flap, but apart from this narrow free edge its attachment to underlying bone is not disturbed. A sharp, thin bladed osteotome is used to elevate the outer table, care being taken to keep strictly to the plane of the diploe, so that the graft is not unduly thin and the inner table is not encroached on. A pedunculated flap is now raised consisting of bone exactly equal in size and shape to the defect and having a third of an inch projecting fringe of fibrous pericranium. The flap is swung across and stitched in its new position. Extra fixation may be secured by undercutting the margin of the freshened area of bone round the defect and slotting the edge of the graft beneath the overhanging rim. The author believes that the advantages of the operation are that the graft may be cut of any size, it has the same curved contour as the skull, it lives through its pedicle, there is excellent fixation of the graft to its bed, and no pressure is exerted on the exposed meninges and cerebrum. He reports a case in which the operation has been successfully performed.

Clinical Journal, London

62: 177-220 (May) 1933

- Natural History, Prognosis and Treatment of Infections with *Bacillus Coli-Communis*. J. A. Ryle.—p. 177.
Cardiovascular Disease from Clinical Standpoint: VI. Infective Endocarditis. C. F. Coombs.—p. 184.
Acute Abdomen in Children. L. E. Barrington-Ward.—p. 187.
Diagnosis and Treatment of Antepartum Hemorrhage. C. H. G. Macafee.—p. 194.
*Treatment of Burns. N. Lock.—p. 200.
Diagnosis of Acute Pancreatitis. C. A. Wells.—p. 203.
Ulcerative Conditions of Pharynx. V. Lambert.—p. 205.

Treatment of Burns.—Lock states that the clinical course of severe burns is characterized by distinct stages (initial or primary shock, acute toxemia or secondary shock, septic toxemia and healing), which are correlated with definite sequences in the pathologic effects and that their recognition affords indications for appropriate treatment. In burns of the perineum and buttocks in children, it is a good plan to sling the legs up to a gallows as for a fractured femur, or the child may be tied so that the coagulum (tannic acid) is not disturbed or cracked. Tannic acid should not be sprayed on both sides of the finger, as the coagulum will contract and may cause compression gangrene of the finger tips. Otherwise, it is almost universally applicable. Care must be taken in spraying the face not to get any of the acid into the eyes. When burns are deeper than the third degree, epithelization will proceed only from the edges, and skin grafts must be adopted. When dressings are required, the author has found that a glycerin, alum and zinc solution promotes growth of epithelium while keeping down granulations. He uses gauze wrung out of a solution made of 20 grains (1.3 Gm.) of alum, 10 grains (0.65 Gm.) of zinc sulphate, 5 ounces (150 cc.) of glycerin and 5 ounces of water. He has observed that compresses with tannic acid are ideal for the treatment of the raw areas from which Thiersch grafts have been taken. Under tannic acid treatment these areas are absolutely painless and are completely healed when the compress is lifted off at the end of a week.

Journal of Physiology, London

78: 113-224 (May 23) 1933

- Rate of Water Absorption in Man and Relationship of Water Load in Tissues to Diuresis. F. H. Smirk.—p. 113.
Effect of Water Drinking on Blood Composition of Human Subjects in Relation to Diuresis. F. H. Smirk.—p. 127.
Influence of Posterior Pituitary Hormone on Absorption and Distribution of Water in Man. F. H. Smirk.—p. 147.
Note on Subcutaneous Absorption of Oils by Rats and Mice, with Especial Reference to Assay of Estrin. Ruth Deanesly and A. S. Parkes.—p. 155.
Effect of Sympathetic Nerve Stimulation on Power of Contraction of Skeletal Muscle. A. B. Corkill and O. W. Tiegs.—p. 161.
Observations on Pumping Action of Heart. H. Barcroft.—p. 186.
Decerebrate Rat. D. J. Bell, E. A. Horne and H. E. Magee.—p. 196.
Responses to Stimulation of Caudal End of Large Bowel in Cat. R. C. Garry.—p. 208.

Journal of Tropical Medicine and Hygiene, London

36: 97-108 (April 1) 1933

- Notes on Mosquito-Borne Diseases in Southern Nigeria: V. Spleen Rate as an Index to Malarial Intensity. D. Anderson.—p. 97.
*Frequency of Liver Changes in Schistosomiasis. F. G. Cawston.—p. 98.

36: 125-140 (May 1) 1933

- Some Pathologic Conditions Seen in Central Australian Aborigines. G. H. Gray and J. B. Cleland.—p. 125.
Use of Insects and Other Arthropods in Medicine. E. H. Hinman.—p. 128.
Studies on Venomous Fishes of Tropical Countries. H. P. Fröes.—p. 134.

Liver Changes in Schistosomiasis.—Cawston states that enlargement of the liver may be expected so long as schistosomes are in the developmental stage in the substance of the liver. This enlargement is irrespective of the species of schistosome and has been noted in both *Schistosomum haematobium* and *S. mansoni* invasion. When there is some natural or acquired immunity to schistosome invasion, the development of these parasites in the liver will be slow and their migration into the abdominal veins will also be delayed, so that hepatic symptoms may be more pronounced and persist for a longer time. Hepatic changes are to be feared when the liver contains large numbers of ill developed or degenerating schistosomes. In countries in which bilharzia disease is prevalent, one may expect to encounter any number of persons who have developed a relative immunity to infection and, on that account, patients showing hepatic enlargement may be more frequent. Other parasitic worms and intestinal parasites that are commonly reported in persons suffering from schistosome infection in Egypt and the Far East would aggravate any tendency to hepatic enlargement and their common occurrence lessens the value of the eosinophilia, which is a relatively reliable sign of bilharzia disease in South Africa. An eosinophilia may be the only available means of diagnosing a bilharzia infection of male parasites alone, and there is commonly a preponderance of male parasites. A high eosinophilia would point to an increased resistance on the part of the host and may be expected when the liver contains numerous immature bilharzia worms. Enlargement of the liver is more likely to be due to the presence of adult parasites than to irritation set up by ova, so that it will subside as the adult worms reach maturity and migrate to their favorite veins.

Lancet, London

1: 893-942 (April 29) 1933

- Inflammation. G. L. Cheate.—p. 893.
Physiology of Gallbladder and Its Functional Abnormalities: III. Abnormalities of Concentration and Secretion in the Gallbladder. C. Newman.—p. 896.
Action of Radium as Seen in the Pelvis. B. D. Pullinger.—p. 902.
*Acute Suppurative Pericarditis: Two Cases Successfully Treated by Operation. L. N. Pyrah and A. B. Pain.—p. 905.

Acute Suppurative Pericarditis.—Pyrah and Pain state that, once the diagnosis of suppurative pericarditis has been made, open operation is the treatment of choice. A local anesthetic is to be preferred because the patient is usually critically ill. In children general anesthesia, either gas and oxygen or light ether anesthesia, is used. The operation occupies but a short time and only small amounts of ether need be used; for this reason the authors feel that ether should always be used with a nervous patient. They report two cases of acute suppurative pericarditis which were successfully treated by excising the fifth costal cartilage. The internal mammary vessels were

ligated and divided and the left pleura was retracted outward. The pericardium was incised and the edges were sutured to the subcutaneous tissues. A large drainage tube was put down to but not into the pericardium, and the wound closed round the tube. By this method, the authors achieved satisfactory drainage, although the tube did not perhaps drain the lowest part of the pericardium; drainage of the pericardium depends to no small extent on the action of the respiratory and cardiac movements. By this method, too, the pleura can be easily seen and avoided and the internal mammary vessels are ligated under direct inspection.

Medical Journal of Australia, Sydney

1: 511-540 (April 29) 1933

*Coal Miner's Lung: Preliminary Account of Chemical Analysis and Pathology of Lungs of Coal Miners in New South Wales. C. Badham and H. B. Taylor.—p. 511.
Perforated Peptic Ulcer: Review of Thirty-Eight Cases. E. M. Fisher.—p. 524.

Coal Miner's Lung.—Badham and Taylor give the industrial history, chemical analysis and pathologic changes of the lungs of thirty-one persons, nineteen of whom worked as coal miners, some of whom had coal miner's lung and ten had pulmonary fibrosis due to their various occupations. The authors employed a method of analysis by which the free silica, not previously determined in any series of lungs, was correctly estimated; that is, the method for the analysis described by Fresenius. They report a case of nodular pulmonary fibrosis in a coal miner not due to free silica but to the carbon or the combined silica of coal dust, and a case of nontuberculous cavitation in silicotic fibrosis in a foundry worker. They discuss the essential features of coal miner's lung—upper lobe consolidation, fibrotic nodules, nontuberculous cavitation and coal dust accumulation as found in various lungs.

1: 541-572 (May 6) 1933

Service of British Medical Association. A. H. Court.—p. 541.
Growth Curve of Australian Infants During First Year of Age. F. W. Clements.—p. 543.
Buccal Carcinoma and Its Treatment. H. S. Stacy.—p. 549.
Function of Sympathetic Nervous System. N. D. Royle.—p. 550.
Experiences in Radiation in Cancer in Female Pelvis. Constance E. D'Arcy and Leila Keatinge.—p. 553.

South African Medical Journal, Cape Town

7: 281-316 (May 13) 1933

Enteric Fever: I. Bacteriology and Immunology of Enteric Fevers. A. Pijper.—p. 283.
Id.: II. Medical Aspect of Typhoid Fever. G. F. Brown.—p. 285.
Id.: III. Surgical Aspects of Typhoid Fever. C. G. L. Van Dyk.—p. 287.
Id.: IV. Public Health Aspect of Typhoid Fever in Urban Areas. G. D. Laing.—p. 288.
Id.: V. Enteric Fever Prevention in Rural Areas. F. W. P. Cluver.—p. 290.
Id.: VI. Dietetic Treatment of Typhoid Fever. H. Seeff.—p. 291.
Id.: VII. Hospitalization of Cases of Enteric Fever. L. S. Robertson.—p. 292.
Spinal Anesthesia. R. Schaffer.—p. 293.
Modern Approach to Obstructive Vascular Disease. C. F. B. Saint.—p. 298.
Congenital Renal Sarcoma of Infants. S. Disler.—p. 301.

Chinese Medical Journal, Shanghai

47: 331-440 (April) 1933

Gallbladder Disease Among the Chinese. J. A. Snell.—p. 331.
*Effect of Presacral Neurectomy on Painful Cystitis. S. T. Kwan, G. Y. Char and P. C. Tung.—p. 344.
Open Amputation of Extremities. L. J. Miltner and F. E. Wan.—p. 350.
Gun Shot Wounds of the Chest: Medico-surgical Experiences During Conflict in Shanghai. G. F. Bume and W. L. Liu.—p. 357.
Study of Subcutaneous Nodules of Juxta-Articular Type Observed in Five Cases of Syphilis in North China. Chu'an-k'uei Hu and C. N. Frazier.—p. 364.
Supravital Staining. C. H. Hu.—p. 379.
Incidence of Intestinal Parasites in Wuhan Area. Mary N. Andrews.—p. 390.

Presacral Neurectomy in Painful Cystitis.—Kwan and his associates resected the presacral nerve in a patient having interstitial cystitis and in one having tuberculosis of the kidney and bladder with dysuria and urgency of urination. The patient having interstitial cystitis obtained complete relief from long-standing vesical pain. The benefits derived in the cases so far treated are sufficiently striking to indicate further trial. The symptoms for which it is performed are severe and disabling, but the operation is not difficult and is apparently without

danger to life. The authors have had no experience with a male subject. According to Learmonth, the patient loses the power of ejaculation but retains the psychic orgasm unchanged. The presacral nerve contains vasoconstrictor fibers to the bladder, so that removal of the nerve must abolish vasoconstriction to some extent and cause a dilatation of arterioles and capillaries in that viscus for long periods of time. It would seem that such an increase in blood supply to the bladder would exert a beneficial influence in any inflammatory process of that organ. The extent of the benefit that can be expected in any one type of case, however, is not yet determined. The operation did not appear to have any effect on micturition in these cases, at least not to an extent recognizable clinically.

Presse Médicale, Paris

41: 1097-1120 (July 12) 1933

Surgical Treatment of Biliary Stasis. O. Lambret.—p. 1097.
*Indications and Results of Arteriography in Arteritis. R. Leriche, R. Fontaine and P. Frieh.—p. 1100.
Circulatory Disturbances of Brain Produced by Cerebral Tumors in Vicinity of Carotid Canal. Egas Moniz, Almeida Lima and Diogo Furtado.—p. 1104.
Reflex Evacuation of Biliary Bladder. Nemours-Auguste.—p. 1106.
*Condition of Diaphragm After Phrenicectomy. R. Rautureau, A. Sallé and A. Bohémier.—p. 1109.
Tolerance of Osseous Tissue to Metallic Magnesium. J. Verbrugge.—p. 1112.
Form of Right Cavity of Heart in Systole and Diastole. A. Ravina, P. Cottenot and Goyer.—p. 1114.
Rapid Duodenal Tubage Under Roentgenologic Control. L. Camus and Levassor.—p. 1116.

Arteriography in Arteritis.—Leriche and his associates state that arteriography performed according to the technic of Dos Santos is innocuous and simple. It finds a large field for application in arteritis, as it supplies information on the three factors that determine the prognosis: the location and the extent of the obliteration and the circulatory conditions in the main trunk above and below the obliterated zone, the anatomic conditions of the vascular walls and the abundance of the collateral circulation. The authors performed twenty-eight arteriographies on twenty-one patients with various forms of arteritis. They were struck by the frequency of segmentary obliterations in diabetic and senile arteritis limited to the superficial femoral artery, the popliteal artery or the posterior tibial. Limited obliterations also seem to be the rule in Buerger's disease, but the arteriographic image differs somewhat from that obtained in the other diseases. In the atheromatous types of arteritis before the stage of obliteration the arteries appear increased in caliber and are undulating, and their contours are irregular and moniliform. In Buerger's disease the vessels retain their straight course and the contours remain regular, but the arteries appear decreased in caliber. Arteriography is the best method for differentiation between true Raynaud's disease and arteritis with vasomotor crises of the Raynaud type. If an obliteration is shown as in the three cases observed, the diagnosis of arteritis is established. In arterial aneurysm, arteriography shows the exact position of the sac and its collaterals and discloses its permeability or obstruction by secondary thrombosis.

Condition of Diaphragm After Phrenicectomy.—Rautureau and his associates made a roentgenologic study of the hemidiaphragmatic function following phrenicectomy in fifty patients. After exeresis of the phrenic nerve, paralysis of the corresponding hemidiaphragm with more or less ascent is the rule. In the fifty patients examined there was only one exception. The paralysis obtained does not imply absolute immobility. In some cases immobility is complete during normal and forced respiration; in others it is complete only during normal respiration, a passive movement of slight amplitude, either normal or paradoxical, manifesting itself during forced respiration. Finally, in other cases one can observe the synergic or inverse movement in both types of respiration. Whichever it is, the effect on the pulmonary lesions appears to be the same. The authors were struck by the transitory nature of this paralysis in a large number of their patients. In nine of the fifty cases it lasted an average of fourteen months. The regained movement does not correspond to the physiologic movement but is very similar to it. There was also a complete disappearance or a pronounced decrease of the hemidiaphragmatic ascent. To avoid the restoration of the hemidiaphragmatic function it is necessary that the exeresis exceed 12 cm. In cases in which

this cannot be realized, paralysis may only be temporary. The restoration of diaphragmatic movement may have varying consequences for the lung. If it occurs when the effect of the phrenicectomy on the lesions is already manifesting itself, the results are altogether unfavorable. If it occurs in a paralysis which is of long standing but which has remained inefficacious, it is not unfavorable and may even be beneficial in cases in which the lesions are strictly localized at the apex of the lung, as it permits return of the function of the healthy base of the lung.

Policlinico, Rome

40:1043-1082 (July 3) 1933. Practical Section

Pathognomonic Sign of Gastric and Duodenal Ulcers.

1043.

and Increase of Endocranial Pressure. U.

Schlatter-Osgood Disease: Case. M. Segrè.—p. 1048.

Pathognomonic Sign of Gastric and Duodenal Ulcer.—Puglisi-Allegra states that pressure of the tip of the index finger on the costal arch demonstrates, in a small circumscribed zone, a pronounced pain varying in the medial distal direction according to the seat of the ulcer: approximately on the right mammary line if duodenal, on the right parasternal if pyloric, and on the left parasternal if of the small curvature. The author maintains that the pain stimulus is transmitted by the sympathetic through its thoracic ganglions and through the communicating branch either to the ganglions or to the spinal nerve centers, and by reflex action through the perforating branches of the intercostal nerve to the abdominal walls, where it produces an area of hypersensitivity which reacts painfully to pressure. This hypersensitivity occurs independent of the deep pain which is elicited by pressing the abdominal walls against the focus of the pathologic lesion and is exactly localized in the zones of sympathetic innervation, defined in such a way that from its location it is possible to determine the seat of the lesion whether duodenal, pyloric or of the small curvature. A paravertebral injection of tutocain into the roots of the sixth, seventh and eighth spinal nerves makes the lateral pain on the costal arch disappear for a long time. Besides the temporary block of pain, the paravertebral injection produces an antispasmodic effect by which the pain reflex is attenuated. The author states that with a right paravertebral injection of 5 cc. of a 0.3 per cent solution of tutocain he was able to control incoercible retching in a week's time in two patients with a juxta-pyloric ulcer accompanied by severe crises of gastric pain. The localization of pain on the costal arch indicates that in the sympathetic ganglions, the communicating branches or the spinal ganglions there exists an anatomic individuality of the fibers and of the cells corresponding to the various gastroduodenal sections. The semeiologic report demonstrates the segmental character of the sensitive innervation of the stomach and has practical value because it enables one to make a definite diagnosis of a disease polymorphic in its symptomatology and course.

Semana Médica, Buenos Aires

40:2021-2088 (June 22) 1933. Partial Index

Complete Inversion of Uterus with Total Prolapse: Case. J. C. Llamas Massini.—p. 2021.

*Erythrocyte Sedimentation Reaction in Diseases of Digestive Tract. H. J. d'Amato.—p. 2032.

Atypical Form of Typhoid with Late Agglutination Reaction: Case. J. Orgaz.—p. 2044.

Bismuth Therapy in Congenital Syphilis in Children. A. N. Accinelli, N. A. Janzón and M. Seoane.—p. 2052.

Diathermic Coagulation of Hemorrhoids. M. Palant.—p. 2058.

Sedimentation Reaction in Diseases of Digestive Tract.—D'Amato performed the erythrocyte sedimentation reaction in 544 patients with various diseases and functional disturbances of the stomach and intestine. He states that unknown physiologic and pathologic factors are involved in the results of the reaction. The sedimentation speed is accelerated or normal and is rarely retarded in the diseases of the stomach and intestine. Although the test by itself is not sufficient for a diagnosis of any gastric or intestinal disease, it is an important factor of diagnostic and prognostic value. The sedimentation speed of the erythrocytes is normal in pure functional disturbances of the stomach and intestine, as well as in the presence of organic lesions of a degenerative type. It is accelerated in infections

and in diseases of toxic origin. The curve of sedimentation parallels that of the infection in all infections excepting typhoid. It is advisable to repeat the test at periodic intervals in the same patient during the course of the disease in order to observe the modifications of the curve of sedimentation. The curve is of diagnostic and prognostic value in tuberculosis and syphilis of the digestive tract, because it parallels that of the condition of the patient. It becomes lower with the improvement of the patient and normal if the patient reaches a cachectic condition. The sedimentation speed is normal in patients with benign tumors. It is exceedingly high in gastric cancer, although a few cases give a normal test. It is slightly accelerated in patients with uncomplicated gastroduodenal ulcers during the periods of apparent improvement and greatly accelerated during the periods of painful crisis, although the figures do not reach extreme values. It is accelerated and shows an undulant curve in cases of complicated gastroduodenal ulcers which follow a protracted evolution. Since the sedimentation speed is accelerated in peptic ulcer and shows a special curve, the test is of value in the differential diagnosis between peptic ulcer and gastric cancer. The test is accelerated or normal in ulcers of the intestine according to their etiology, and it facilitates the diagnosis of the localization of any gastric or intestinal disease.

Archiv für Kinderheilkunde, Stuttgart

99:193-256 (June 23) 1933

Enlargement of Heart During Early Childhood. E. Püschel.—p. 193.

Esophagospasm, Esophagotracheal Fistula and Chronic Aspiration Pneumonia. J. Duken.—p. 208.

*Spontaneous Pneumothorax in Small Children with Tuberculosis. Eva Heschl.—p. 215.

Acetone-mic Vomiting, with Especial Consideration of Scarlet Fever Problem. L. von Kostyal.—p. 220.

Prolonged Metabolic Tests on Healthy Nurslings. G. Krause.—p. 228.

Spontaneous Pneumothorax in Small Children.—Heschl describes the histories of two children, aged 10 months and 2½ years, respectively, who had pulmonary tuberculosis. Perforation of their tuberculous cavities caused pyopneumothorax. In the younger child the perforation developed without any external influence, and in the older child the perforation took place some time after an artificial pneumothorax had been induced. It cannot be definitely proved that the perforation was caused by the pneumothorax, but the author admits that the artificial pneumothorax, by creating a tension in the walls of the cavity, probably hastened the perforation. The clinical manifestations of the perforation were comparatively slight in both cases. Death did not follow the perforation immediately, and the author thinks that the fatal outcome was caused by the tuberculous disease.

Archiv für klinische Chirurgie, Berlin

175:357-564 (July 5) 1933

*Modification of Bassini Operation as Applied to More Than 4,500 Patients. Kirschner.—p. 357.

Results with Kirschner's Modification of Bassini Operation for Inguinal Hernia. A. Bessin.—p. 367.

Results with Kirschner's Method of Zone Spinal Anesthesia with Controllable Dosage. M. Friedmann.—p. 376.

Differential Diagnosis of Epulis, Osteodystrophia Fibrosa and Giant-Cell Sarcoma. C. Renner.—p. 388.

Clinical-Experimental Contribution to Question of Basal Metabolism in Thyroid and Thymus Therapy. S. Suzuki.—p. 409.

Experimental Studies of Cholecystography. K. Yamashita.—p. 429.

Sedimentation Reaction in Fractures. T. Olovson.—p. 446.

Question of Serum Therapy in Osteomyelitis. H. Gross.—p. 454.

Studies of Absorption from Stomach in Ileus. Matthæus.—p. 458.

Newer Observations in Diagnosis of Kidney and Bladder Tuberculosis. N. Moro.—p. 466.

Recurrence of Colics After Operations on Biliary Tracts. I. M. Talman.—p. 472.

*Effect of Parathyroid Extract on Blood Coagulability. J. Marx.—p. 547.

Duration of Foreign Bodies in Appendix. Esau.—p. 560.

Roentgen Diagnosis of Benign Tumors of Esophagus. N. A. Podkaminsky.—p. 562.

Modification of Bassini Operation.—The modification to be described has been used by Kirschner for the last seventeen years. In a follow up study by his assistant Bessin, the recurrence in a group of 242 men more than four years after the operation amounted to 4.13 per cent. The modification consists in transplanting the spermatic cord so that it comes to lie in the subcutaneous tissue. The cord is made to emerge through the aponeurosis of the external oblique muscle about 2 cm. outside the point at which it pierces the deep Bassini suture line.

The cord makes a right angle twist, first running laterally toward the anterior superior spine of the ilium, and then returning and running medially and downward toward the scrotum. The advantages claimed for it are that it does away with an opening for the external inguinal ring in the aponeurosis of the external oblique muscle, the multiple twisting of the cord in the lateral extremity of the incision reduces the possibility of the recurrence in this locality, and the doubling application of the layers has a tendency to reduce the recurrence of herniation in the entire extent of the incision.

Parathyroid Extract and Blood Coagulability.—Marx reports three groups of experiments on the effect of injections of parathyroid extract on the bleeding time and the coagulation time of blood. Parathyroid extract was administered to rabbits and to normal men. Sometime later, after the effect had worn off, the same animals and men were given calcium intravenously. It was found that the parathyroid extract, twenty-five minutes after its introduction, reduced the coagulation time by 12.4 per cent and, from eighteen to twenty-four hours later, by 14.8 per cent. The calcium, twenty-five minutes after injection, reduced the coagulation time by 2.4 per cent, and this effect was no longer in evidence when tested at later periods. While the parathyroid hormone was capable within twenty-five minutes of reducing the bleeding time by 11.6 per cent, the calcium was without any effect. The parathyroid hormone reduced within thirty minutes the coagulation time in normal men by 26.4 per cent, while the calcium was able to reduce it by only 8.2 per cent. The effect of parathyroid hormone was still in evidence twenty-four hours later, as it was still capable of diminishing the coagulation time by 8.8 per cent. Calcium had no such effect at this time. The bleeding time was not affected by either agent. However, repeated injections of parathyroid extract were able not only to reduce the coagulation time by 35.1 per cent but likewise to reduce the bleeding time by 21 per cent. A rise in the blood calcium level is not necessary for the reduction of the coagulation or for the bleeding time. The author was able, with the aid of parathyroid extract, to reduce in cholemic dogs the coagulation time of the blood by 33.7 per cent and the bleeding time by 28 per cent. On the basis of his animal experiments, the author recommends the injection of parathyroid extract in patients with jaundice one-half hour before the operation in preference to calcium injections.

Chirurg, Berlin

5: 529-568 (July 15) 1933

- *Indications for Blood Transfusion. B. Breiter.—p. 529.
- Disturbances in Skin Sensitivity After Operations on the Knee. K. H. Erb.—p. 533.
- Treatment of Congenital Hip Dislocation. J. Sudbrack.—p. 541.
- Posttraumatic Influenzal Meningitis Following Injury to Skull. H. Prinz.—p. 544.
- Method of Treatment of Aboral End of Stomach in Partial Stomach Resection. K. Güttig.—p. 547.

Indications for Blood Transfusion.—Breiter points out that, barring damage due to improper grouping, the causes of unfavorable effects of blood transfusion are not understood. With a clearer understanding of these causes, the indications for blood transfusion could be more sharply delimited with the effect of further reducing the number of untoward results. At present, transfusion is definitely indicated in acute as well as in slowly developing chronic anemia, in hemorrhagic diatheses with anomalies of the blood picture, in severe burns, in carbon dioxide poisoning, in cholemic bleeding, and in severe ulcerative colitis. On the basis of extensive clinical trial, a favorable result may be expected in pernicious anemia, pulmonary hemorrhage, hemolytic jaundice, hemophilia, hemorrhagic purpura, postoperative shock, secondary anemia in nurslings, sepsis, and preoperative and postoperative transfusion in extensive operations. A therapeutic attempt with one or several transfusions is justified in agranulocytosis, acute leukemia, chronic lymphatic leukemia, severe chronic benzene poisoning, arsenical dermatitis, gold dermatitis, erysipelas, essential aplastic anemia, herpiform impetigo, pubertal hemorrhages and pemphigus. Transfusion for the purpose of creating immunity is recommended in septic scarlet fever, exfoliative dermatitis, alimentary intoxications, toxic-infectious scleroma and bronchopneumonia. Blood transfusions are of no avail in decompensated hearts due to organic disease, in leukemia without anemia, in scurvy and in miliary tuberculosis.

Klinische Wochenschrift, Berlin

12: 969-1008 (June 24) 1933

- Can Changes in Aspects of Diphtheria Be Explained on Basis of Type System in Bacteriology? K. W. Clauber.—p. 969.
- Influence of Carotenes on Growth, Xerophthalmia, Colpokeratosis and Estrual Cycle. R. Kuhn and H. Brockmann.—p. 972.
- *Cumulation of Digitalis Glucosides. H. Bauer and K. Fromherz.—p. 973.
- Intravenous Evipan-Sodium Anesthesia in Gynecology. P. Schumacher and E. Adler.—p. 976.
- *Insulin Refractory Diabetic Coma. D. Adlersberg and O. Porges.—p. 979.
- Chemical Identification of Substance, Isolated from Spleen and Decreasing Mesenchymal Receptive Function, as 2-Oxy-6-Amniopyrimidin (Cytosine). C. Moncorps and O. Günther.—p. 979.
- Two Different Modes of Reaction of Finely Granulated Leukocytes in Lethally Ending Infections. H. Mommsen.—p. 981.
- Therapeutic Action of Intravenously Administered Vitamin B₁ in Treatment of Nutritional Disturbances with Toxic Manifestations in Nurslings. B. Gruenfelder, E. Rabinovici, A. Geiger and A. Rosenberg.—p. 983.
- Question of Dosage in Malaria of Children. F. Ronnefeldt.—p. 986.
- Modification of Estrogenic Function of Thallium Intoxicated and "Degenerated" Mice by Urine from Pregnant Women and by Prolan A. L. Bickel and A. Buschke.—p. 987.
- Determination of Cutaneous Temperature. W. Strauss.—p. 989.
- Chloroprivic Uremia or Azotemia, Respectively, and Their Treatment. G. Katsch.—p. 989.

Cumulation of Digitalis Glucosides.—Bauer and Fromherz reject the theory that manifestations of cumulation are caused by glucoside storage (cumulation of substance). They show that cumulation is the result of primary actions and of secondary cardiac changes caused thereby. If small doses are given, these changes are reversible; in the case of large doses, however, they may be irreversible (cumulation of effects). In experiments on cats, the authors found that most of the animals die of cardiac complications within two weeks after the administration of only 35 per cent of a lethal dose of digitoxin. This indicates that in the course of two weeks changes take place in the heart which cannot be explained merely by a glucoside storage. In the case of gitalin, 80 per cent of the animals survive the administration of 64 per cent of the single lethal dose. The authors think that the degree of cumulation of the various digitalis glucosides is most reliably indicated by the difference between the dose that causes death at once and the dose that causes death after some time. On this basis the authors were able to corroborate Hatcher's observation that gitalin cumulates much less than does digitoxin. The cumulative effects of preparations that contain gitalin and digitoxin stand between those of digitoxin and gitalin.

Insulin Refractory Diabetic Coma.—Adlersberg and Porges give the clinical history of a man, aged 30, with diabetes mellitus and exophthalmic goiter. At first the diabetes mellitus yielded to insulin treatment, although, considering the degree of glycosuria and hyperglycemia, larger doses of insulin were required than is the case in uncomplicated cases of diabetes. Several months after this, it was still possible to counteract a subcomatose condition by means of large doses of insulin, but two days later a coma developed in which the patient died, and continuous blood sugar tests indicated a nearly complete insulin resistance.

Medizinische Klinik, Berlin

29: 899-932 (July 1) 1933

- *Natural Fluctuations in Fertility of Women. A. Hermstein.—p. 899.
- Hydrogen Ion Concentration and Its Determination. A. Lottermoser.—p. 901.
- *Tonus Fluctuations of Heart in Young Persons. K. Walko.—p. 904.
- Serratous Paralysis Following Serum Disease. E. Schilling.—p. 907.
- Follicular Disease of Conjunctiva in Aleukemic Lymphadenosis. R. Salus.—p. 907.
- Myalgia. F. Kräupl.—p. 909.
- *Oral Desensitization in Nutritional Allergies. Lotte Firgan.—p. 912.
- Case of Hypoplasia of Left Kidney. R. Winter.—p. 913.
- Attempts at Biologic Scarlet Fever Diagnosis. W. Spat.—p. 913.

Natural Fluctuations in Fertility of Women.—Hermstein presents a critical evaluation of the results obtained by various investigators. He shows that during the first week and a half after the menstrual period the question of fertility is still unsolved because scientific knowledge contradicts the facts obtained empirically and statistically. According to practical observations the conception capacity is comparatively high during this period and most likely highest during the second and third week. This is conceded by nearly all authors. During the fourth week it is probably lowest, for at this time

there is hardly an ovum susceptible of fertilization and the condition of the uterine mucous membrane makes it unsuitable for nidation. Moreover, the premenstrual swelling of the mucous membrane closes the uterus toward the tubes and the ovaries and makes a union of the gametes impossible, or the gametes are expelled with the beginning menstruation. During this period the curve representing the incidence of conception is lowest but it is not at the zero point.

Tonus Fluctuations of Heart in Young Persons.—Walko studied the behavior of the cardiac and vascular tonus in healthy young persons and in those with circulatory neuroses. He examined a large number of young persons between the ages of 14 and 22 and found that the tonus of the heart of young persons is still labile, which is indicated in the fluctuating form and size of the heart. Within certain limits these fluctuations are noticeable in healthy young persons, but in young persons with a weak sympathetic nervous system, and with vascular neuroses the fluctuations are larger and of longer duration, so that a stabilization of the heart takes place much later, particularly if such nervous and weak persons are purposely kept away from physical exertions and exercises. The author admits that physical exertion, especially if the rest periods are insufficient, is likely to cause dilatation of the heart in young persons who have a labile nervous and vascular system. The best means of increasing the functional capacity of such hearts which are otherwise healthy is the adaptation treatment by systematic physical exercises, without aiming at record accomplishments. As in all sympathetic neuroses, the psychic treatment is also a great help in these cases. A combination of systematic physical training and psychotherapy is particularly helpful during the period of growth.

Oral Desensitization in Nutritional Allergies.—According to Firkau, the nutritive allergies in which the antigens are known can be successfully treated by specific oral desensitization. There are two methods by which this can be done: the treatment is begun with the smallest doses of the antigen, which are gradually increased, or a minute quantity of the specific antigen is given from forty-five to sixty minutes before the meal. Some authors employ the latter method by administering peptone preparations before each meal, but Firkau thinks it more practical to give a small amount of the offensive food preparatory to the meal. She found this form of desensitization effective in a number of cases of alimentary urticaria and of alimentary diarrhea. Her results corroborate Besredka's law, according to which not only does the preliminary administration of minimum quantities of the anaphylactogenic substance produce a temporary protection against the anaphylactic shock but a prolonged treatment counteracts the anaphylactic condition.

Münchener medizinische Wochenschrift, Munich

SO: 955-994 (June 23) 1933

- Meaning of Term Allergy and Allergic Disease Process in Internal Medicine. H. Assmann.—p. 955.
- *Therapy of Eczema. W. Scholtz.—p. 959.
- External Factors as Immediate Causes of Endogenous Psychoses. A. Bostroem.—p. 963.
- *Operative Treatment of Relapsing Nonspecific and Gonorrheal Effusions into Joint. A. Löwen.—p. 965.
- *Practical Significance of Determination of Cutaneous Temperatures. J. Jpsen.—p. 968.
- Chemotherapy of Pneumococcal and Streptococcal Infection. R. Hilgermann.—p. 972.
- Treatment of Acute Rheumatic Neuralgia with Aconite-Dispert. R. Kafemann.—p. 973.
- Treatment of Congelation Urticaria. H. Schlenker.—p. 974.
- New Precipitation Method for Demonstration of Tubercle Bacilli. F. Hill.—p. 974.

Therapy of Eczema.—Scholtz, after differentiating eczematous disorders from other forms of cutaneous disturbances, classifies them on the basis of their pathogenesis into three groups: (1) allergic eczemas, (2) localized susceptibility eczemas and (3) eczematoses. He designates as allergic eczemas those types in which the skin of the patient is hypersensitive to a certain substance and reacts with an eczematous inflammation. The proof that a cutaneous disorder is an allergic eczema must be furnished either by a therapeutic experiment or by cutaneous tests. In discussing the treatment of this form of eczema the author advises avoidance of contact with the offensive substance. He does not think highly of desensitization treatments and considers them justified only when the substance

is an indispensable foodstuff, such as bread or, in children, milk. Other treatments to be tried in allergic eczema are salt free and lactovegetarian diets, administration of small amounts of peptone one-half hour before each meal, autohemotherapy, and injections of foreign serums, of calcium preparations and of dextrose. The eczemas of localized susceptibility are the slowly developing eczemas limited to one part of the body (usually the hands and occasionally the face) and which, with frequent exacerbations or relapses, take a chronic course. The occupational eczemas are the most frequent of this group. In this type of eczema there is no hypersusceptibility to a certain substance, but the various factors, chemical or physical, lead slowly to an eczematous inflammation. Even if the injurious substances are eliminated and there is an apparent cure, the skin does not become entirely normal. It should therefore be the aim of the treatment not only to effect an apparent cure but to reestablish normal anatomic and physiologic conditions, and with these a normal power of resistance. Systematic care of the skin is of the greatest importance. The author gives advice on the treatment of certain forms of this group of eczemas. In the impetiginous eczemas, it is essential to remove the crusts by thick applications of ointments, in order to avoid breeding places for staphylococci and streptococci. Wet bandages or fatty ointments are advisable in weeping eczemas, while zinc pastes are helpful in papular, papulovesicular or papulopustular eczemas. Fatty ointments are inadvisable in the latter forms, for they may cause an exacerbation. Weak solutions (from 0.1 to 0.25 per cent) of pyrogallol acid or mild tar preparations are recommended for the squamous eczemas. In lichenoid eczemas, the acanthosis can be counteracted by sulphur and zinc pastes and by tincture of iodine or silver nitrate solutions, but roentgen and infra-red rays have also proved helpful. Pyrogallol triacetate and sulphur are recommended for seborrheal eczemas. The third group of eczemas, the eczematoses, do not yield readily to treatment. They are caused by internal factors, such as metabolic disturbances and an irritability of the sensory and sympathetic nervous systems. Patients with these disorders should have rest in a not too warm bed. The diet should be mostly vegetarian and salt free. Coffee, tea and alcohol should be avoided. Injection of dextrose solutions and administration of calcium preparation are advisable, and small doses of atropine may be tried.

Operative Treatment of Effusions into Joint.—Löwen discusses the treatment of fissural degeneration of the cartilage and chronic or relapsing intermittent dropsy of the knee joint and patellar chondropathy. He states that, if conservative therapy fails, the operative treatment frequently brings good results in nongonorrheal exudative disturbances of the knee joint from trauma or other causes. He evaluates puncture of the knee joint, applied alone or together with irrigations, and simple arthrotomy. Fenestration of the joint, the technic of which he improved, he found particularly valuable. With a knife trocar he severs the upper point of the suprapatellar bursa so that the articular fluid is discharged under the vastus medialis muscle. If the capsular ligament is indurated, a rapid histologic examination is made to determine whether tuberculosis is present. If it can be excluded, the fenestration is made immediately from the arthrotomy wound. If capsular indurations are absent, the articular fenestration is made only with the knife trocar, following a small cutaneous incision. The patients feel eased almost immediately after the operation and with a small pressure bandage they can generally get up on the day of operation. The permanent results are favorable. The fenestration, which for a time makes possible the discharge of the newly forming exudate, gradually closes again. The healing process is accompanied by a hyperemia that has a curative effect on the irritation. The author found articular fenestration helpful following removal of a joint mouse from the elbow joint. The postoperative reestablishment of function was more rapid and less painful when the capsular wound was left open, instead of being closed by a suture. The favorable results obtained in these conditions induced the author to try articular fenestration in severe gonorrheal articular inflammations. He gives the clinical histories of two cases, in both of which the results were favorable, and he thinks that, although generalization of the treatment is not justified on the basis of only two cases, the method is worthy of consideration when the conservative treatment fails.

Significance of Cutaneous Temperatures.—Jpsen shows that the measurement of the cutaneous temperatures is an arterial test and a valuable diagnostic aid. Since the cutaneous temperature is lower than the rectal temperature, the thermometers for cutaneous use must have a scale of from 24 to 42 C. (65.2 to 107.6 F.). To measure the cutaneous temperature, pieces of felt 1 cm. in thickness and 5 by 5 cm. in area are fastened to the skin, and the thermometer is placed between the felt and the skin and is left there for fifteen minutes. In arterial embolisms of the extremities, the measurement of the temperature shows a considerably lower temperature in the affected extremity. The author cites a case in which a difference of 9 degrees C. was detected in the two legs. In cases of this nature the cutaneous temperature test permits a correct diagnosis in from one to two hours, which is of great advantage for the treatment, because embolisms should be surgically treated within the first six hours. In arteriosclerosis the determination of the cutaneous temperature aids in recognizing an impending gangrene and, if gangrene has developed, it helps in deciding on the site of amputation. If symmetrical portions of the two legs show temperature differences of more than 1 degree C., the amputation must be done higher up, because, if done at this site, gangrene will follow. Determination of the temperature of the skin is also helpful in arterial spasms. Arterial spasms develop frequently and unilaterally after apparently small lesions, and, since not only the cutaneous but also the deeper lying arteries may become involved, the blood supply of the muscles is impaired, with resulting decrease in the working capacity. In some articular disorders the cutaneous temperature indicates whether a pathologic process exists; for instance, after trauma of the knee the injured knee shows a higher temperature than the other one. If in juvenile hydrarthrosis the temperature is the same on the two knees, a tuberculosis must be excluded with considerable certainty. In phlebitides, the cutaneous temperature is increased on the diseased side. Metabolism tests in exophthalmic goiter can be controlled by the determination of cutaneous temperatures, because the temperature of the feet decreases proportionately to the metabolic rate. In general anesthesia, the temperature of the feet increases considerably. This increase is the surest sign that the patient is asleep. If the temperature fails to increase or if it decreases again, shock exists or is imminent.

Zentralblatt für Gynäkologie, Leipzig

57:1441-1504 (June 24) 1933

- Hormone Studies on Plants. H. Kustner.—p. 1442.
- *Hyperventilation Eclampsia. E. Klasten.—p. 1445.
- *Demonstration of Action of Administered Luteal Hormone on Human Uterus. C. Clauberg.—p. 1461.
- Fetal Intra-Uterine Skeletization. F. Lardi.—p. 1468.
- Case of Healed Rupture of Ovary. G. Hromada.—p. 1470.
- Myoma and Pregnancy. O. Köster.—p. 1473.
- Pregnancy in Amputated Oviduct. J. S. Schapiro.—p. 1477.

Hyperventilation Eclampsia.—In studying the respiratory and metabolic conditions during the preeclamptic stage, Klasten noted that occasionally an eclamptic attack was produced by unintentional hyperventilation experiments; namely, when for from five to ten minutes at the Krogh apparatus the women inhaled oxygen only. He points out that hyperventilation produces a decrease in the carbon dioxide tension of the blood and a consequent alkalosis accompanied by a decrease in the ionized blood calcium; if there is a predisposition of the central nervous system, eclamptic convulsions may result. Eclamptic attacks may develop following hyperventilation in patients with severe toxicoses as well as in apparently healthy pregnant and puerperal women. Thus the author differentiates two types of hyperventilation eclampsia, the pure and the superimposed form. The first form develops following hyperventilation in women with a nervous predisposition and with a predisposition of the convulsive centers as the result of systemic changes of pregnancy, owing to deviations in the ionic milieu and in the metabolic conditions. This form is generally mild and has a favorable prognosis. It develops occasionally during or after the period of expulsion because of labored and deep respiration; also after the patient has left the delivery room, after exposure to cold or loss of blood, and after a small amount of alcohol has been taken or after chills, in which case angiospastic factors probably are a factor. Attacks that develop after pain, as in the course of an injection, likewise seem to belong in this group.

The superimposed form of hyperventilation eclampsia, which sets in also following an abnormally deep or tachypneic breathing, develops in the course toxicoses of gestation with hepatic and renal disturbances. In this form the author thinks it advisable to induce the delivery early and to accelerate it as much as possible, particularly if tachypnea develops, for an expectant attitude will make the diagnosis more unfavorable. For the treatment of pure hyperventilation eclampsia, because there exists an abnormal irritability and a predisposition to spasms, the author recommends parathyroid hormone and calcium preparations. A deepening of the respiration, which some obstetricians like to induce in order to improve the efforts of the parturient woman, is inadvisable in these cases. Eventually, a 5 or 10 per cent carbon dioxide mixture may be employed, or the patient's mouth may be closed to check the hyperventilation. Anodynes should be employed in both types of hyperventilation eclampsia.

Action of Luteal Hormone on Uterus.—After calling attention to the difficulties encountered in tests with the corpus luteum hormone, Clauberg reports that he was able to produce the proliferation and the secretory phases in the uterine mucosa of a castrated woman by the administration of the follicular and the luteal hormones. The woman received for two weeks follicular hormone and then for six days luteal hormone. After this hormone treatment was discontinued, menstruation set in. The author concedes that the successive administration of the two hormones is probably not entirely physiologic, for proliferation must persist if a secretory transformation is to take place, and the production of the corpus luteum hormone is accompanied by the production of a certain amount of follicular hormone. With these facts in mind, he treated a girl with genital infantilism who, at the age of 18, had never had a menstrual bleeding. In the course of eighteen days the girl was given 260,000 mouse units of follicular hormone, and then, 100 rabbit units of luteal hormone in daily doses of from 5 to 15 units for eleven days, but simultaneously with the luteal hormone small doses of follicular hormone were administered every day, except the last two. The result of this treatment was that, two days after the last injection of the luteal hormone, menstruation set in and lasted two days. The author reports an artificial prolongation of a normal secretory phase and the production of a decidua by administration of additional luteal hormone.

Finska Läkaresällskapets Handlingar, Helsingfors

75:513-615 (June) 1933

- *Further Contribution to So-Called Primary Tuberculosis Complex in Skin. E. Bruusgaard.—p. 513.
- What Hinders Effect of Treatment with Liver and Stomach in Some Cases of Pernicious Botrioccephalus Anemia? F. Saltzman.—p. 528.
- Continued Observations on Bordet-Wassermann and Other Serologic Reactions in Lupus Erythematosus. J. Schaumann and K. Hedén.—p. 536.
- Inflammatory Rectal Strictures and Inguinal Lymphogranuloma. L. Peterson.—p. 545.

Tuberculosis Complex in Skin.—Bruusgaard reports three cases of primary tuberculosis complex (primary tuberculosis ulcer with lymphadenitis) in boys aged 4, 8 and 5 years, respectively, and previously well, the first with primary ulcer at one corner of the mouth, the second with a primary tuberculosis complex in the right lower extremity and primary ulcer on the calf of the right leg, and the third with primary ulcer on the right arm. There was no evidence of infection in the home. Contact infection with tubercle bacilli through some abrasion of the skin is considered probable.

Ugeskrift for Læger, Copenhagen

95:737-758 (June 29) 1933

- *Still's Disease in Adults: Contribution to Symptomatology of Subchronic Polyarthritides. O. Moltke.—p. 737.
- Green Color of Hair and so on Due to Permanent Waving. K. Philiplsen.—p. 746.

Still's Disease in Adults.—Moltke reports four cases of subchronic or chronic polyarthritides in young men, with subfebrile temperature, characteristic changes in the joints, especially periarticular, polyadenitis, muscular atrophy and affected general condition. He establishes the similarity between Still's disease, the "acute rheumatoid arthritis" of English and American authors, and his cases. The disturbance is thought to be infectious. In three of the cases, removal of infectious foci resulted in improvement.

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SO-CALLED CIRCULATION OF THE CEREBROSPINAL FLUID

CHAIRMAN'S ADDRESS

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The problem of circulation of the cerebrospinal fluid is closely associated with other important but as yet unsettled problems pertaining to this fluid. Of these, the origin and the modes of its absorption will be considered in brief.

According to the dominant teaching, the cerebrospinal fluid originates largely, if not exclusively, from the choroid plexuses of the two lateral third and fourth cerebral ventricles, from which it escapes mainly through the recesses of Luschka to the basal cisterns of the brain. From the cisterns, the fluid is supposed to run upward to the subarachnoid space of the cerebral convexity, where it is assumed to become absorbed by the villi of the arachnoid membrane and discharged into the venous sinuses of the dura. The cerebrospinal fluid is supposed to travel not only upward or cephalad but also caudad to the subarachnoid space and the central canal of the spinal cord. With such a conception of the origin of the cerebrospinal fluid it is quite admissible to speak of a circulation,¹ for how otherwise could the fluid reach the vertex of the brain or invade the subarachnoid space of the spinal cord? The escape of the fluid from the cerebrospinal subarachnoid spaces has from the days of Key and Retzius² been thought to take place in the brain, through the arachnoid villi or the pacchionian bodies.³ In the spinal cord, the absorption is supposed to occur through the blood vessels, a mode of discharge also described for the cerebral portion of the cerebrospinal fluid.⁴

It is evident that the main phenomena in connection with the origin and absorption of the cerebrospinal fluid—its progress against the law of gravity from the base to the top of the brain, its simultaneous flow caudad to the spinal spaces and the dissimilar modes of its absorption in the brain and the spinal cord—are not

altogether clear and are even illogical. The only feature that seems to be established is that there is a fluid in the ventricles of the brain, the subarachnoid spaces and the central canal. However, the tissues of the brain and cord also possess a fluid in which they are bathed together with the blood vessels and the myriads of capillaries. Through osmosis or other physicochemical factors the tissue fluids, saturated with waste products of activity of the brain and cord, are transported to the adventitial spaces of the walls of the blood vessels and capillaries. These spaces are in direct communication (fig. 1) with the cerebrospinal subarachnoid spaces, the cerebral ventricles and the spinal central canal, forming a system of channels. The latter extend outside the brain and cord over the perineurial spaces of the cranial and peripheral nerves and the spinal roots (fig. 2). That is to say, the spaces of the peripheral nerves (endoneurial, perineurial and epineurial) are continuous with the cerebrospinal subarachnoid spaces and the cerebral ventricles, with which they form a whole. It is possible to inject a substance into a peripheral nerve and convey the substance to the cerebral subarachnoid spaces, including the cisterns and the ventricles,⁵ and, vice versa, it is possible to transmit to the peripheral nerves a substance that has been injected into the subarachnoid spaces of the brain and cord.² In the presence of such a system of canals in the brain and cord, one is justified to postulate that their tissue fluids, having invaded the adventitial and the subarachnoid spaces, the ventricles and the cisterns, extend into other parts, such as the perineurial spaces of the cranial and spinal nerves, by which they are discharged to the general vascular system. With such a fact in view, one must consider that the contents of the subarachnoid space are derived not from the choroid plexus but from the tissue fluids of the cerebrospinal parenchyma. They are transmitted from one part of the system of canals to another by a slow process of diffusion, probably assisted by the contracting and expanding movements of the cord and the brain.

One may thus speak of a circulation of the cerebrospinal fluid, but not as an active, physiologic process such as is presented by the circulation of the blood discharged in definite directions by a central force into a system of elastic tubes. Nothing of the kind takes place in the tissue fluids, which seem to be in a state of equilibrium and an interference with which tends to produce either abnormal currents, such as occur in spinal punctures, for instance, or phenomena of stasis. The phenomena of stasis are of particular importance. They are manifest wherever an obstruction of the system of pathways for the fluid exists. If the obstruction is in the cerebral ventricles (a tumor, for instance) or at the base of the brain (meningitis), stasis of the

From the Neuropathology Laboratory, University of Illinois College of Medicine.

Owing to lack of space, this article is abbreviated by the omission of two illustrations. The complete article appears in the author's reprints.

Read before the Section on Nervous and Mental Diseases at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

1. Cushing, Harvey: The Third Circulation, in *Studies of Intracranial Physiology and Surgery*, the Cameron Prize Lectures, New York, Oxford University Press, 1925.

2. Key, S., and Retzius, A.: *Anatomie des Nervensystems und des Bindegewebes*, Stockholm, P. A. Norstedt & Söner, 1876, vol. 2.

3. Weel, L. H.: The Absorption of Cerebrospinal Fluid into the Venous System, *Am. J. Anat.* 31: 191 (Jan.) 1923.

4. Dandy, W. E., and Blackfan, K. D.: An Experimental and Clinical Study of Internal Hydrocephalus, *J. A. M. A.* 61: 2216 (Dec. 20) 1913; Internal Hydrocephalus: An Experimental, Clinical and Pathological Study, *Am. J. Dis. Child.* 5: 406 (Dec.) 1914.

5. Funaoka, Sligo: Untersuchungen über das periphere Nervensystem: Die Injektion des Nervensystems, Kyoto, Japan, Anatomical Institute of Kyoto Imperial University, 1930, ser. A, no. 1.

tissue fluids takes place in the form of internal and external hydrocephalus. More striking are the phenomena of stasis in the spinal cord. Figure 3 shows stasis in the tissues of the spinal cord, as evidenced by their rarefaction. The cause of the rarefaction is a large mass of connective tissue in the epidural space, which harbors several abscesses. The mass obliterated the perineurial root spaces and thus rendered impossible the

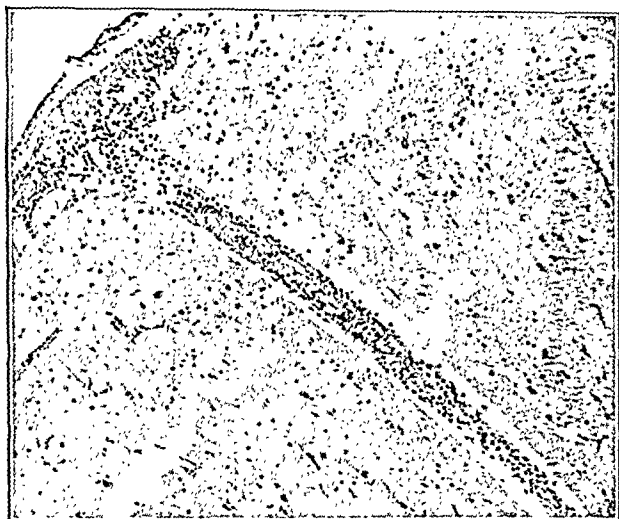


Fig. 1.—A blood vessel with its perivascular spaces filled with polymorphonuclear cells extends from the deep area of the brain to the subarachnoid space (from Cone and Barrera: *The Brain and the Cerebrospinal Fluid in Acute Aseptic Cerebral Embolism*, Arch. Neurol. & Psychiat. 25: 523 [March] 1931).

outflow of the fluid contents of the subarachnoid spaces, which, as has been said, are continuous with the perineurial spaces of the spinal roots. In turn, the stasis in the subarachnoid space prevents the discharge of the tissue fluids of the spinal cord, causing their stasis and rarefaction. At the levels of the spinal cord where there is no obstruction, as in the cervical, upper dorsal and

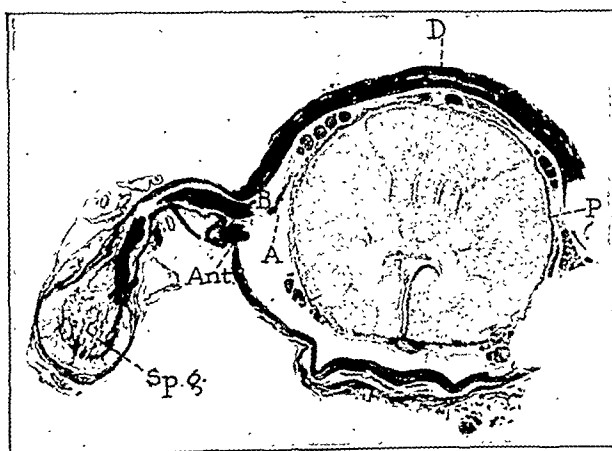


Fig. 2.—Extension of the subarachnoid space (marked B and enclosing in the upper part of the picture the posterior roots) into the spinal ganglion (sp.g.). D is the dura, underneath which is a free space, the subdural space. P is the pia mater, above which are the posterior roots. At A is the arachnoid; Ant indicates the anterior root; at B is the posterior root within the subarachnoid space. Van Gieson stain; reduced from a magnification of $\times 7$.

lumbosacral segments, the outflow of the fluids is free and areas of stagnation are absent, as is well shown in figure 4. The obstruction does not have to be voluminous. A small nodule (fig. 5) suffices to cause the phenomena of stasis, and severe clinical symptoms result.

Spastic paraplegia and other phenomena of pressure on the spinal cord developed within a short time in the patient from whom the tissue for this slide was taken. Though the pressure was relieved by operation, the patient died from genito-urinary complications. The epidural lesion was a lymphogranuloma. The phenomena of stasis occur with any epidural lesion, whether benign or malignant. Stasis may be caused by a carcinoma (fig. 6) or a melanoblastoma (fig. 7), by adhesions in the spinal membranes or by a mere inflammatory nodule. Other facts support the view that the contents of the subarachnoid space, or of the tissue spaces of the cord, which are the same, are discharged at individual levels. The facts also confirm the opinion that there must be such a phenomenon as circulation of the cerebrospinal fluid, but it is only in a transverse direction and not caudad or cephalad.

That the fluid does not circulate caudad or cephalad was well shown by the experimental work of Sachs and his co-workers.⁶ They injected very small amounts of a coloring substance into the subarachnoid space of

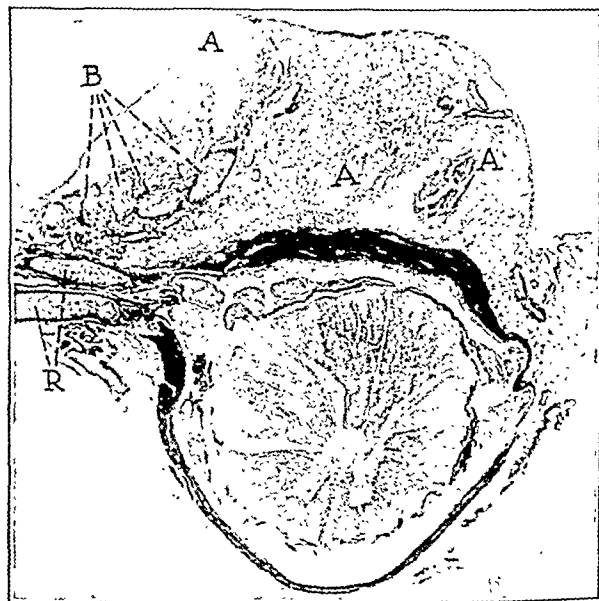


Fig. 3.—Rarefaction in the posterolateral columns, and a slight rarefaction in the anterior columns. The mass above the posterior thickened dura is the epidural space filled with proliferated connective tissue enclosing three abscesses (A, A, A); at B are smaller encapsulated abscesses; at R, the roots with the perineurial spaces obstructed. Toluidine blue stain; reduced from a magnification of $\times 5$.

dogs and watched the level of the dye as it extended. The extension of the droplet of dye was a slow process. When, for instance, it was injected at the level of the third lumbar vertebra, only at the end of ten hours was it located higher up, at the level of the first cervical vertebra, and in none of the experiments "had the dye diffused throughout the entire cerebrospinal space." Sachs and his co-workers reached the conclusion that a true circulation of the spinal fluid does not exist, and that the extension of the dye was, in their experiments, by slight diffusion assisted by gravity. Yet pathologic observations show that if the cerebrospinal fluid possessed no movements or some sort of circulation, the tissue fluids of the brain and cord would become stagnant and lead to their destruction by causing rarefaction, unless one assumes that the physical process of diffusion alone may suffice to prevent it. Neuropath-

6. Sachs, Ernest; Wilkins, H., and Sams, C. F.: *Studies on Cerebrospinal Circulation by a New Method*, Tr. Am. Neurol. A., 1929, p. 253.

ologic studies thus bring to light important facts in relation to the cerebrospinal fluid that cannot be understood on the basis of histologic, physiologic, pharmacologic and other evidence. Studies of inflammatory,



Fig. 5.—Small epidural nodule (lymphogranulomas), especially to the right of the cord and a marked rarefaction of the lateral column on the same side.

degenerative and even neoplastic states force one to conclude that the cerebrospinal fluid is not produced by the choroid plexus but represents the tissue fluids of the brain and spinal cord, and that it is not absorbed by



Fig. 7.—Melanoblastoma of the cauda equina, enveloping the spinal cord, which shows areas of rarefaction.

the arachnoid villi or pacchionian bodies, but, carrying the waste products of nerve activity, is eliminated by the perineurial spaces of the cranial and spinal nerves through a passive process of slow circulation.

REMOVAL OF THE RIGHT CEREBRAL HEMISPHERE FOR INFILTRATING GLIOMA

REPORT OF A CASE

W. JAMES GARDNER, M.D.

CLEVELAND

The removal of the right cerebral hemisphere is a procedure that seldom is indicated. From the surgical standpoint, its use is restricted to those cases of infiltrating glioma involving the midportion of the hemisphere in which it would appear that this procedure and none other could be effectual in removing the entire growth. From the humanitarian standpoint, it should be offered only to those patients desirous of living under the resultant adverse circumstances, which should also be carefully explained to the relatives.

Dandy,¹ in 1928, indicated the feasibility of this procedure and reported five cases. Of this series, the first patient lived three and one-half years but died of recurrence of the growth; the second patient died within three months from recurrence; the third died of hemorrhage forty-eight hours after the operation; the fourth died two weeks after the operation from pneumonia, while the fifth was living two months after the operation at the time of the report.

Of three cases in which I have removed the right cerebral hemisphere, the last two patients died within thirty-six hours of hyperthermia, and the first is alive and well twenty-one months after operation. From these results, it appears that this operation entails a very grave risk but, if the tumor is completely removed, an indefinite continuance of life is possible. As the speech areas of the brain are in the opposite hemisphere in right-handed persons, no demonstrable speech or intellectual impairment follows the operation. The preservation of function may be quite remarkable, as is shown by the patient whose case report follows:

A married woman, aged 31, was referred to the clinic by Dr. John D. O'Brien, Aug. 29, 1931. She complained of convulsions, weakness of the left side of the body, headaches and failing vision. The following history was elicited: Generalized convulsions had begun ten years before and had occurred from two to four times yearly. The attacks were preceded by an aura of intense burning in the palm of the left hand. During each of three pregnancies occurring six years, three years and ten months prior to admission, the attacks had increased in frequency but had changed to convulsions of a jacksonian type, involving the left side of the body. Eight months previously a therapeutic abortion had been performed on account of frequent convulsions and a beginning left hemiparesis. For two months blurring of vision had been present, and headache, vomiting and marked emotional instability had occurred during the last two weeks before admission.

On examination, the patient exhibited clonic convulsions affecting the left side of the face and neck and occasionally the left arm. These attacks occurred every few minutes. She cried or laughed on very slight provocation. A bilateral papilledema was present and studies of the visual fields revealed a complete left homonymous hemianopia. There was moderate left hemiparesis, affecting the lower part of the face, arm and leg. The tendon reflexes on this side were increased, and the Babinski response was positive. A bilateral ankle clonus was present. Tactile perception was greatly impaired over the entire left side

From the Cleveland Clinic.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

1. Dandy, W. E.: Removal of the Right Cerebral Hemisphere for Certain Tumors with Hemiplegia, *J. A. M. A.* 90: 823-829 (March 17) 1928.

of the body and face, while pain, thermal, position and vibratory perception appeared to be entirely lost. The spinal fluid pressure was 300 mm. of water. Roentgenograms of the skull disclosed an atrophy of the posterior clinoids and dorsum sellae. The clinical diagnosis was tumor in the right temporoparietal region.

Operation was performed, Aug. 31, 1931. With the patient in the sitting position, a large horseshoe-shaped flap of scalp with the attached pericranium and temporal muscle was refracted from the right frontoparietal region. A section of

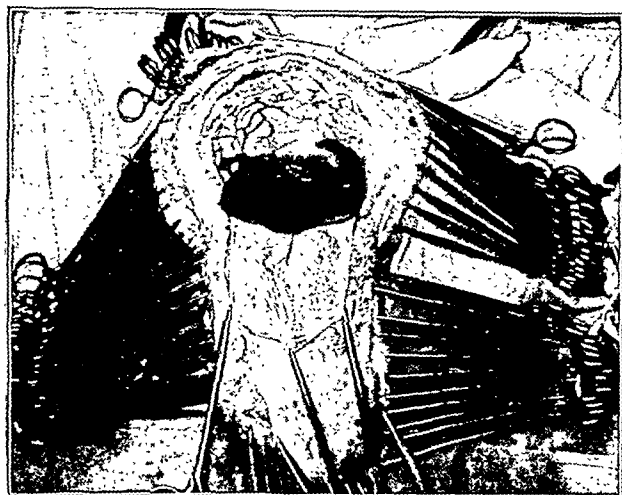


Fig. 1.—Operative exposure, showing tumor.

bone $4\frac{1}{2}$ inches in diameter was removed with a Souttar craniotome and the bony opening was enlarged into the temporal region with a rongeur. When the dura was opened, a cauliflower-like cortical tumor was exposed in the temporoparietal region. The tumor was exceedingly fragile, dark and very vascular. On palpation it appeared to extend widely beneath the cortex, and the subcortical portion contained some small cysts.

After consultation with the relatives it was decided to proceed with an excision of the hemisphere. The emerging cerebral veins to the sagittal sinus and those from the inferior surface of the occipital lobe were ligated, cut and coagulated with the electrosurgical unit. The hemisphere was retracted laterally and an incision was made through the cingulate gyrus and corpus callosum into the body of the lateral ventricle. This incision was then carried about the posterior genu and forward about

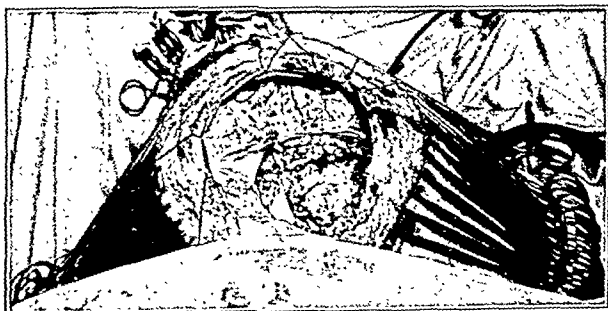


Fig. 2.—Appearance of operative field after removal of hemisphere.

the anterior genu of the corpus callosum. The branches of the anterior and posterior cerebral arteries were secured with silver clips as they were severed. An incision was made in the floor of the body of the ventricle through the internal capsule and outer portion of the corpus striatum into the descending horn of the ventricle. The hippocampal gyrus was then incised from behind forward, a considerable portion of this gyrus and a portion of the mesial wall of the descending horn and choroid plexus being left. The middle cerebral artery was then located, clamped about 1 cm. from its point of origin, and severed. The hemisphere was removed (figs. 1 and 2).

Additional brain tissue in the region of the corpus striatum, which appeared to be infiltrated by the tumor, was trimmed away with the electrosurgical unit. The dura was closed, the cavity filled with saline solution, the section of bone replaced and the scalp closed. During the operation, the patient was given 750 cc. of blood from a suitable donor and 800 cc. of a 10 per cent solution of dextrose intravenously. The sitting position of the patient was thought to facilitate the removal of the hemisphere. The bony opening, however, was rather small for adequate exposure.

Examination of the removed tissue disclosed a superficial portion of the tumor weighing 65 Gm. The excised portion of the hemisphere weighed 520 Gm. (fig. 3). The tumor was found to have invaded the hemisphere deeply and appeared

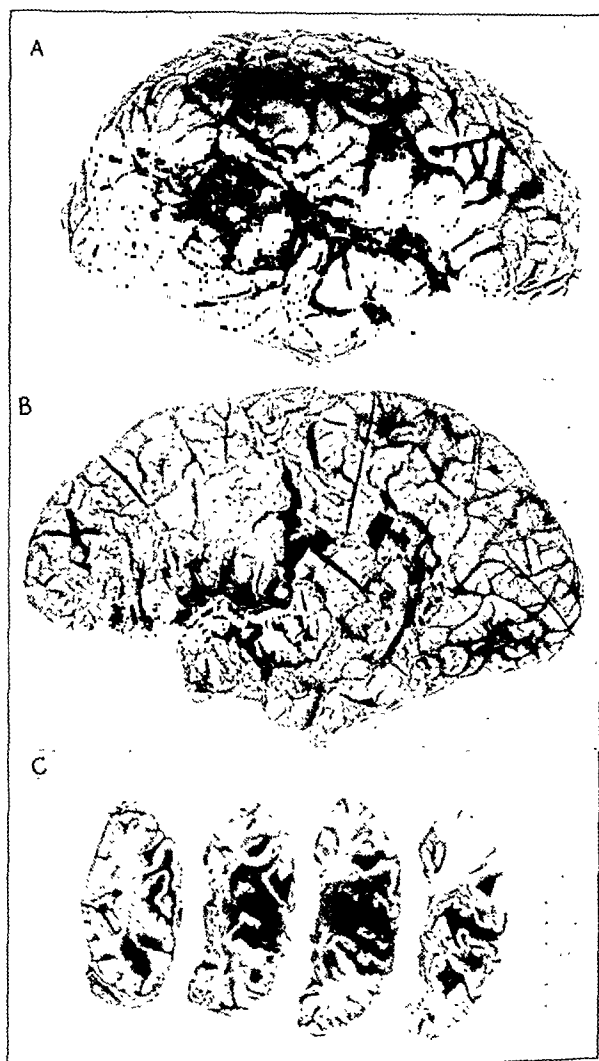


Fig. 3.—A, lateral aspect of gross surgical specimen after the cortical portion of the tumor had been removed; B, mesial aspect of specimen; C, sections of gross specimen to show the depth of tumor infiltration.

mesially at the plane of resection. Microscopically, the tumor proved to be an oligodendroglioma of a moderate degree of malignancy. Mitoses were frequently seen in the tumor cells. In a previous report of this case,² the tumor was described as a spongioblastoma. This diagnosis was controverted by more detailed study (figs. 4 and 5).

The patient withstood the operation very well. A few hours after operation she recognized and talked with friends. Forty-eight hours after operation, cerebrospinal fluid leaked through the incision. The wound was dressed and fluid aspirated from the operative cavity by a needle introduced through the scalp. This procedure was repeated from two to four times daily for

2. O'Brien, J. D.: Removal of the Right Cerebral Hemisphere, Ohio State M. J. 28: 645-649 (Sept.) 1932.

four weeks. The patient's convalescence was very gratifying, although there was a daily rise in temperature to 100 F. until the time of her discharge fifty-one days later. Bladder and rectal incontinence was present for two weeks after operation. The blood pressure, pulse and respirations were not greatly altered by the procedure. At no time during convalescence was there any evidence of mental impairment. No emotional instability was observed following the operation. The patient was optimistic; her attitude bordered on euphoria. She spent part of her time reading and writing. There were no convulsions or headaches and the patient was very grateful for the relief. At no time did she ask about the recovery of the left arm and leg. About five weeks after the operation, the patient began to take a few steps with the support of two nurses. A week later she was able to walk the length of the ward with support. There was definite flexion and extension of the left thigh and leg in walking and she was able to bear her entire weight on it. There was no voluntary movement in the leg when the patient was lying in bed. Sensory tests showed a very marked impairment of tactile, pain and thermal perception on the entire left side. This impairment was less marked in the face than elsewhere. There was complete astereognosis and loss of sense of position in the left arm and leg. These limbs were beginning to show some spasticity.

The patient was last examined, May 17, 1933, twenty months after the operation. She was surprisingly free of complaints. There had been no headache or convulsions. She felt that she was making satisfactory progress and was quite content with her lot. Relatives and friends could discern no alteration in her personality or intellectual abilities.

A neurologic examination disclosed the following: The sense of smell was impaired in the right nostril. The visual acuity was 6/6 in the right eye and 6/6-2 in the left. The optic disks were well defined and rather pale. There was a complete left homonymous hemianopia. The pupils were equal and reacted normally to light and in accommodation. The ocular rotations were full. The left palpebral fissure was 1 mm. wider than on the right side. It appeared that the left masseter and temporal muscles did not contract as forcibly as the right, but her jaw did not deviate on opening. The face was symmetrical in

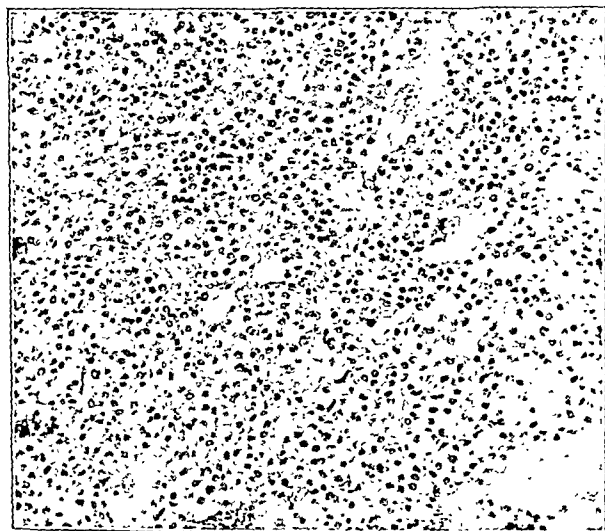


Fig. 4.—Section of tumor; oligodendroglioma; reduced from a photomicrograph with a magnification of 150 diameters.

repose except for the slight widening of the left palpebral fissure. The innervation of the occipitofrontalis was symmetrical. There was a very slight weakness on the left side on closing the eyes forcibly and a questionable weakness of the lower part of the face when she smiled and showed her teeth. An audiogram revealed normal hearing in each ear. The pharynx and soft palate appeared to be equally innervated. The tongue protruded in the midline without tremor.

The patient walked quite well without support. She was able to go up and down stairs without aid. She stated that she

frequently went shopping and that her endurance was good. About her home she was able to assist with the cleaning. She washed dishes and clothes in spite of the fact that the left arm was useless. There was considerable power of flexion and extension of the left knee and hip, although these movements were hampered by spasticity which varied from time to time. There was no voluntary movement in the ankle or toes. In walking, there were some associated mass movements in the upper extremity but no voluntary power.

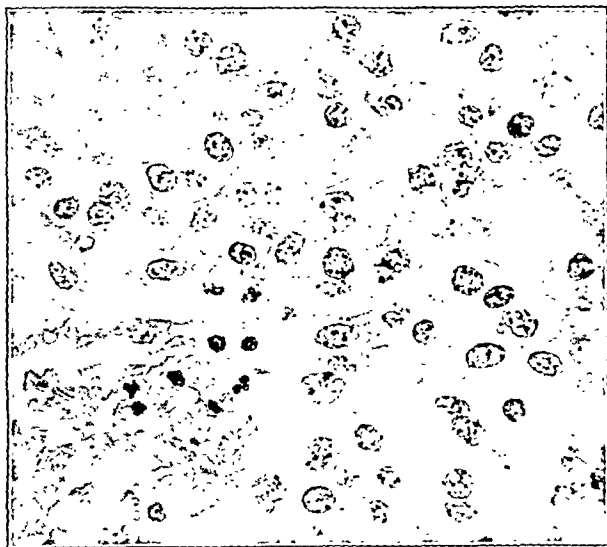


Fig. 5.—Same section as in figure 4 under higher magnification (reduced from a photomicrograph with a magnification of 600 diameters).

Sensory tests revealed complete inability to perceive light touch and gentle pin pricks below the level of the neck on the left side. The patient could not distinguish between temperatures of 40 and 140 Fahrenheit. Two point discrimination and sense of position were entirely lost. Firm pressure with a pin was recognized as painful and firm pressure with the hand was felt but not correctly localized. Vibratory perception was entirely lost on the left side.

In the face there was some impairment of perception for light touch, gentle pin prick and temperature, but these stimuli were recognized and were fairly well localized. Two points were recognized as such if they were separated by a distance of 3 cm. or more.

The tendon reflexes were greatly exaggerated on the left side and the Babinski response was positive. The left palatal and pharyngeal reflexes were very slightly impaired, and the left corneal and abdominal reflexes were absent.

The most interesting feature of this case is the degree of function that is present in the left leg.³ The earliest motion to appear after operation was the automatic movement of walking. This indicates that the function present in this leg is due to basal ganglion innervation and is not due to impulses from the homolateral hemisphere traversing the direct pyramidal tract.

2050 East Ninety-Third Street.

ABSTRACT OF DISCUSSION

DR. WINCHELL MCK. CRAIG, Rochester, Minn.: To those of us who are limiting ourselves to neurosurgery, the case which Dr. Gardner has just presented is of extreme interest because it is always difficult to decide between radical and conservative methods when dealing with cerebral tumors of such extensive involvement. This case illustrates what can be done with modern methods in attempting to remove a right-sided tumor of great magnitude. The fact that Dr. Gardner did not

3. Dandy reports that in his patient, who lived three and one-half years after operation, slight flexion and extension of the knee and thigh subsequently developed, but there was never enough function to be of any service.

produce a more permanent disability would indicate that he carefully avoided injuring the basal ganglions. Recently, I had under my care a child of 7 months who was brought because of gradual enlargement of the head. The usual tests were made and the condition appeared to be that of a communicating hydrocephalus, although the ventriculogram revealed what was thought to be a distinctly enlarged right ventricle. When the right hemisphere was explored to remove the choroid plexuses, a congenital absence of the right hemisphere was found and only the basal ganglions had developed. The lack of clinical evidence of this abnormality tends to explain why excellent results, such as Dr. Gardner has shown, are possible and indicates that he did not disturb the basal ganglions during operation. In discussing the pathology of his case, Dr. Gardner emphasized the point that the tumor was a relatively benign type of growth, a so-called oligodendroglioma. Similar to tumors encountered in general surgery, attempts have been made to differentiate tumors of the brain by correlating the clinical and pathological data to determine the relative malignancy. Gliomas represent one of the more benign types of gliomas. In a report before the American College of Surgeons last fall, regarding five year cures in brain tumors of various types, it was interesting to note that the groups in which five year cures were obtained included the oligodendrogliomas. There is one additional contraindication to removal of cerebral hemispheres, which I should like to emphasize. The function of the frontal lobe has to do with the intelligence, and if the frontal lobe could be amputated without any effect on the personality of the patient, this procedure would be much more enthusiastically recommended. I am inclined to think that caution should be used in advising a resection which includes the frontal lobe, because cases have been observed in which there was marked mental deterioration following removal of the frontal lobe. Consequently, in addition to the points emphasized by Dr. Gardner to discuss with the patient and the patient's relatives regarding postoperative difficulties, I think the possibility of postoperative mental deterioration should be stressed.

INTRAPLEURAL AND EXTRAPLEURAL PNEUMOLYSIS IN TREATMENT OF PULMONARY TUBERCULOSIS

LE ROY S. PETERS, M.D.

AND

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After the discovery of the tubercle bacillus in 1882, the medical profession believed that it was only a matter of time when a cure for the disease was inevitable. Awaiting the advent of this blessing, sanatoriums were established, and the open air rest regimen was inaugurated. Associations were formed and an educational program was launched. So great was the enthusiasm that optimists expected that the disease would be eradicated in a ten-year period.

After fifty years of this optimism, we of today can sit calmly back and, viewing the still large tuberculous population, realize that the dream of the early worker has not been realized. The curability of tuberculosis is still in the distant future. True, much has been done to cut down the mortality rate, but not the morbidity. Education of the profession has brought more and more early types of cases under treatment, so that often arrest of the disease grants to the individual a life of economic usefulness.

Many heralded cures have been given the profession, to be used enthusiastically for a time and then thrown into the discard. Rest in sanatoriums or rest at home under proper guidance has been the one pro-

cedure that seems to have made a niche for itself and to have outlived any criticism that may have been directed against it. So firmly convinced have they become of the value of rest that it is difficult to convert many general practitioners to the idea that compression therapy is really a recognized method of treatment.

The excuse for presenting to a medical audience a subject that is really surgical is evident. The time has come when the man doing general medicine must be made to realize that, unless he familiarizes himself with the possibilities of the surgical side of tuberculosis treatment, he is not giving the best the profession has to offer in the management of this disease.

Twenty years ago, when the administration of artificial pneumothorax was begun, much adverse criticism was voiced even by tuberculosis workers. One of us in a paper¹ before the National Tuberculosis Association in 1919, predicted that this form of compression was here to stay, and we have lived long enough to have this prediction realized. It has taken years to bring pneumothorax to the point of perfection it has reached today, and the surgery of the present period will no doubt be considered crude in the light of tomorrow's knowledge and experience. But, like pneumothorax, it is now a recognized procedure and must be so looked on by any one who considers himself competent to direct the vicissitudes of the patient.

All forms of compression therapy in the majority of cases are directed to the closure of cavities. True, there are many patients without cavitation who are proper subjects for this method, but space forbids their consideration in a paper limited in scope. Any form of compression, to be effective, must be complete, and the end-results will be in direct ratio to this accomplishment.

In an analysis of 700 cases of artificial pneumothorax we² showed that, with complete compression, 53 per cent of the patients are well and 24 per cent are dead; with partial compression, 25 per cent are well and 44 per cent are dead, and with no free space, 16 per cent are well and 60 per cent are dead. A glance at these percentages is glaring proof that compression is successful only as it is complete.

We are assuming that tuberculosis workers are agreed that compression therapy is warranted in certain types of cases. We also assume that they are agreed that compression, to produce results, must be complete—that cavities must be closed. Granting these points, we wish to call attention to the advantages of both intrapleural and extrapleural pneumolysis.

A difference of opinion exists among some chest surgeons as to the advantages or disadvantages of the open or closed operation in intrapleural pneumolysis. In our opinion there should be no reason for disagreement. To attempt to sever adhesions in a pneumothorax by the open method subjects the patient to a major operation with all its attendant risks, while the closed method with the cautery is comparatively simple, and in our hands the complications have been nil. This is true according to reports of many other men doing this type of work. It would seem the better part of wisdom to spare the tuberculous patient as much as possible in the way of radical surgery.

We have been doing intrapleural pneumolysis by the Jacobæus-Unverricht method for the past four years

Read before the Section on Practice of Medicine at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

1. Peters, L. S.: Artificial Pneumothorax in Pulmonary Tuberculosis, New York M. J. 109: 535 (March 29), 591 (April 5), 629 (April 12), 678 (April 19), 715 (April 26) 1919.

2. Peters, L. S.: Compression Therapy of Pulmonary Tuberculosis: Comparative Study, Am. Rev. Tuberc. 19: 74-83 (Jan.) 1929.

and have converted 75 per cent of the partial collapse into complete collapse cases. It is a most valuable adjunct to pneumothorax treatment, and patients whose cavities are not closed after a few months' time should be given the opportunity of this type of operation. Thus, an increased percentage of individuals will be restored to health and countless numbers of normal human beings will be saved from infection through cavity closure, thereby rendering the patient free from tubercle bacilli and eliminating him as a menace to those with whom he comes in contact. Unfortunately, many patients cannot be given a pneumothorax because of a completely adherent pleura, and in many of the partial compression cases cauterization cannot be done, owing to the type of adhesion. These present another problem.

A few years ago a complete thoracoplasty was advised, but now there are two ways that offer less risk to the patient and also a fair percentage of good results. First we shall consider an extrapleural pneumolysis and the introduction of a paraffin pack. This method is effective in upper-stage cavities and, owing to the fact that it is one of the less radical of the major operations, can be used in patients who are not sufficiently good surgical risks for more radical surgery. It has its disadvantages. At times the paraffin breaks

than the paraffin pack unless the patient, as we have stated before, is a poor surgical risk. Here the chance of infection is reduced to a minimum, since the operative wound remains open and access can be gained for any infection that may develop.

The patient has the added advantage of a selective collapse, since the lower part of the lung still functions.



Fig. 3.—Fibroid upper part of lung with cavity; pneumothorax impossible because of adhesions.



Fig. 4.—Cavity entirely closed following extrapleural pneumolysis and fat transplant. The fat sloughed and the cavity was kept closed with a pneumatic bag until healing was established.



Fig. 1.—Artificial pneumothorax; cavity held open by adhesions.



Fig. 2.—Entire lung collapsed after cauterization of adhesions.

through the tissue; the wound becomes infected, which necessitates the removal of the paraffin and defeats the purpose of the operation. However, this so seldom happens and the results have been so uniformly good that in the right type of case it is to be recommended rather than more radical surgery. The older objection on the melting points of the paraffin and its slipping or extruding through the operative wound is overcome by the newer formulas. This paraffin (with the consistency of putty) packed into the cavity produced by the pneumolysis seldom gives trouble. It seems to offer much better results than any other foreign substance so far advocated. The fat pack, with or without a pedicle, has not proved nearly as successful in our work.

The results over a three-year period show 45 per cent of the patients clinically well and 27 per cent dead. This seems to compare favorably with other methods of compression.

An upper-stage thoracoplasty with mild silver protein pack, the operation of choice, was devised by Dr. Joseph Casper of Fitzsimons General Hospital, Denver. This was described before the American Sanatorium Association meeting last year.³ It is to be chosen rather

Needless to say, unless the remaining lung is free from active disease, this operation as well as the paraffin pack is contraindicated, and a complete thoracoplasty must be advised. Our series in this type of operation is too small to warrant conclusions, but the results as to arrested tuberculosis compare favorably with complete thoracoplasties, and the death percentage is much smaller.

OPERATIVE TECHNIC

We shall not attempt to give the operative technic in detail, as this can be obtained from more extensive articles on the subject.

Intrapleural Pneumolysis.—This has been done after the Jacobæus-Unverricht method, the galvanocautery being used to sever the adhesions. In the heavy adhesions and when large vessels are visible, the adhesion is coagulated by slow heat before any cutting is done. We have had no difficulties with hemorrhage and have been able to control any bleeding by direct pressure



Fig. 5.—Fibroid upper part of lung with large cavity; pneumothorax impossible. The patient was too ill for extensive surgery.



Fig. 6.—Cavity closed after an extrapleural pneumolysis and paraffin pack.

with a blunt stylet introduced through the cautery cannula.

Extrapleural Pneumolysis (Paraffin Pack).—This consists in resecting a portion of one rib near the apex. The excavated apex of the lung with its parietal pleura is then completely dissected away from the chest wall by finger dissection and compressed downward.

3. Bruns, E. H., and Casper, Joseph: Chest Surgery in the Treatment of Tuberculosis, *Am. Rev. Tuberc.* 26: 665 (Dec.) 1932.

A paraffin mixture, warm enough to mold easily, is then packed in above the lung and pleura, after which the muscles and skin are closed without drainage.

We have found the best approach to the apex to be through a posterior incision around the scapula, with a resection of a portion of the third rib. The apex is accessible from this approach and the heavy muscle covering holds the paraffin in position. The anterior approach, resecting the second rib, is simpler, but we have found that fluid formation, necessitating aspiration, is more common, and in two of our cases it was necessary to remove the paraffin. In none of the posterior cases have we had any trouble with the operative field.

The paraffin mixture that has been most uniformly successful consists of 75 cc. of paraffin with a melting point of 55 C. and 25 cc. of paraffin with a melting point of from 43 to 44 C.; 1 cc. of bismuth carbonate and 0.05 cc. of vioform are added, and the mixture is melted and sterilized. Before it is used it is again melted and shaken to obtain perfect uniformity and allowed to cool until it kneads readily so that it can be easily molded into the extrapleural cavity.

*Extrapleural Pneumolysis (Mild Silver Protein).—*In our operation using the mild silver protein pack, we



Fig. 7.—Fibroid upper part of lung with cavitation.

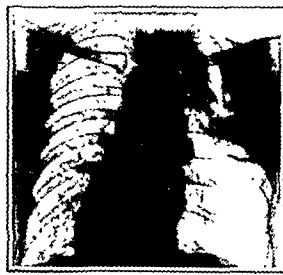


Fig. 8.—Cavity entirely closed after upper-stage thoracoplasty with mild silver protein pack.

have followed the technic of Casper, with minor changes. A regular upper-stage posterior thoracoplasty is done, rather long sections of from four to six ribs being resected, enough to embrace all the pathologic area. The parietal pleura and intercostal bundles, together with the periosteum, are then dissected off well down to the spinal gutter and laterally for 2 or 3 inches. The anterior attachments of the apex are not disturbed. Thus, the whole upper portion of the lung can be compressed against the anterior chest wall. It is packed down with gauze bandage soaked in 25 per cent mild silver protein. The muscles and skin are then closed over this, enough opening being left at the lower angle of the wound to give easy access for repacking. The first pack is removed in from seven to ten days. Repacking is then done every seven days until the compressed lung is set, after which the wound is allowed to granulate in.

CONCLUSIONS

1. There is more to the treatment of pulmonary tuberculosis than a policy of watchful waiting over an indefinite period, with the anticipation that nature will close cavities and heal an advanced disease.

2. Compression therapy is a recognized treatment for pulmonary tuberculosis.

3. Compression therapy, to be effective, must be complete.

4. Both intrapleural and extrapleural pneumolysis offer marked advantages for cavity closure when the usual forms of compression have failed.

5. Closed intrapleural pneumolysis is much safer and should be preferred to the open operation.

6. Extrapleural pneumolysis, with the paraffin pack, is an excellent substitute for the Casper operation when the patient is a poor surgical risk.

7. Extrapleural pneumolysis with an upper stage thoracoplasty and a mild silver protein pack after the method of Casper is the operation of preference when the patient's condition warrants radical surgery.

ABSTRACT OF DISCUSSION

DR. J. A. MYERS, Minneapolis: In 1917, Riviere said: "No more hopeful ray of sunshine has ever come to illumine the dark kingdoms of disease than that introduced into the path of the consumptive through the discovery of artificial pneumothorax." At that time, however, physicians did not know how to diagnose tuberculosis early. The vast majority of cases were moderately or far advanced when first detected. A great many of them already presented adhesions, which made satisfactory collapse by artificial pneumothorax impossible. It has been learned that by waiting until patients come because of symptoms, more than 80 per cent are in a moderately or far advanced condition and many of them cannot have satisfactory collapse by artificial pneumothorax. If the very best use of collapse therapy is to be made, physicians must go into communities with the tuberculin test, the physical examination, the x-ray film and other methods and find cases of pulmonary tuberculosis before the patients have fallen ill. Then by means of artificial pneumothorax many lesions can be directed toward healing. It isn't very long ago that artificial pneumothorax was spoken of as a measure of last resort. It was administered only after everything else had been tried. Now it is not considered sacrilegious for the physician to institute artificial pneumothorax in the minimal progressive case, nor is it malpractice to institute artificial pneumothorax in selected cases and keep the patients ambulatory. Even when this is done, there are patients who have already developed adhesions which make satisfactory collapse by artificial pneumothorax impossible. The authors called attention to the fact that for such patients not all hope has gone. Pneumolysis makes satisfactory collapse possible in many. Thus, they accomplish two worth-while results: Many who would be invalids for the rest of their lives are restored to good working capacities and actually enjoy life; their lesions are closed, so that they are no longer spreaders of tubercle bacilli.

Pardee Wave Provoked by Therapeutic Dose of Digitalis.—Duclos, in the *Archivos de cardiologia y hematologia* for April, presents a case in which the effects of a therapeutic dose of digitalis are interesting from the standpoint of electrocardiography. An electrocardiogram taken just prior to commencing digitalization exhibited left ventricular preponderance and an isoelectric T wave in the first lead. The patient was in a state of cardiac insufficiency. After seventy drops of digitalis had been administered to the patient in four days, a new electrocardiogram was taken. This time a characteristic Pardee wave was seen in leads 1 and 3 with other anomalies of the QRS complex which suggested an inhibition or hypofunction of a certain segment of the myocardium of a functional nature. The author considered it as such because in the two weeks after the digitalis treatment was abandoned the electrocardiographic tracing gradually resumed its original form. Taking into consideration the antecedents of the patient and his first electrocardiogram with an isoelectric T wave in the first lead, the author believes that an alteration of the coronary system existed. As a result of this organic change of the coronaries the arterial system suffered the consequences of the vasoconstrictor power of the digitalis, against which normal individuals defend themselves by mechanisms which produce vasodilatation. This case is an objective demonstration of the vasoconstrictor power of digitalis and a lesson as to the conduct to follow in digitalization of patients suspected of having an organic or functional disease of the coronaries.

LIVER SEQUESTRATION AFTER
CHOLECYSTECTOMYREPORT OF CASE, WITH REVIEW OF EXPERIMENTAL
AND CLINICAL OBSERVATIONS

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Anemic infarction of the liver with subsequent separation of the necrotic tissue and its removal at operation is an unusual clinical condition. A thorough search of the literature from 1878 to date revealed many cases of liver sequestration but no case reports following a cholecystectomy. Because of the extremely abundant double blood supply to the liver, an anemic infarct is in itself a rarity. Operations for the direct removal of liver sequestrums have never been done because of the difficulty in diagnosis. The condition is usually associated with a history of physical or surgical trauma. In the case to be described, the sequestrum was an unexpected finding two months after a cholecystectomy had been performed.

REPORT OF CASE

D. S., a white woman, aged 48, born in Russia, married, was admitted to the Jewish Hospital of Brooklyn, Oct. 12, 1932, in the surgical service of Dr. Herman Shann. At the time of admission the patient complained of pain in the right upper quadrant, radiating to the back and shoulder, associated with nausea. The past history revealed that she had intermittent attacks of pain in the gallbladder region for more than five years. The attacks were precipitated by fatty foods or heavy meals. There was no vomiting, jaundice, or clay colored stools.

Physical examination at the time of admission was essentially negative, except for abdominal tenderness and resistance in the right upper quadrant. A diagnosis of chronic cholecystitis with cholelithiasis was made. The patient was operated on by Dr. Shann, Oct. 13, 1932, and a cholecystectomy and appendectomy was done. At operation the gallbladder was found buried in a mass of dense old adhesions involving the stomach, colon and lesser omentum. The gallbladder contained numerous small stones. The appendix was long and atrophic, the mesentery markedly infiltrated and friable. The pathologist reported that the gallbladder was 8 cm. long, pale, smooth and glistening, the wall somewhat thickened, the mucosa brown, granular and scarred. The contents consisted of thick brown bile and several bile pigment calculi. Microscopically the gallbladder serosa was thickened and fibrous, the muscularis was hypertrophied, and the mucosa was papillomatous with a moderate degree of round cell infiltration. The appendix was 6.5 cm. long, pale, smooth and glistening, the wall thin and the lumen obliterated. Microscopically the appendix showed a diffuse fibrous tissue reaction involving all the coats of the organ. The pathologic diagnosis was fibrosis of the appendix and papillomatous cholecystitis with cholelithiasis.

The patient made a very satisfactory operative recovery except that there was a considerable amount of biliary drainage through a small sinus in the center of the wound. She was discharged, Nov. 9, 1932, approximately three weeks after operation. The biliary drainage continued while the patient was home. In view of the possibility of an overlooked common duct stone or injury to the common duct, the patient was readmitted to the hospital, Dec. 8, 1932.

At the second admission the patient was found to be in good general condition. The chest was normal. Examination of the abdomen revealed a small sinus through which golden yellow bile was draining profusely. No abdominal masses, tenderness or rigidity was found. Temperature, pulse and respiration were normal. The stools were not clay colored. There was

no jaundice and no itching of the skin. The appetite, however, was poor. She had no abdominal pain or vomiting and no recurrence of the previous symptoms. Laboratory examinations revealed the urine normal except for a trace of albumin and a few hyaline casts. Red blood cells numbered 3,900,000; white blood cells, 9,750, with 73 per cent polymorphonuclears. The sedimentation time was sixty minutes. Hemoglobin was 75 per cent (Dare). The Wassermann and Kahn tests were negative. The coagulation time was four and one-half minutes; the bleeding time, one and one-half minutes. The blood chemistry was normal. The icterus index was 20; bilirubin direct positive and indirect, 4.2 units. The bromsulphthalein test returned 40 per cent in one-half hour.

December 10, two months after the first operation, the patient was taken to the operating room and the abdomen was reopened by Dr. Shann under spinal anesthesia. A probe in the fistulous tract led to a collection of bile and purulent fluid under the liver. Massive adhesions obscured from view the lower edge of the liver, stomach and duodenum. After much difficulty the stomach was exposed and the pylorus and duodenum were freed from the liver. When the inferior surface of the liver had been exposed, a most unusual picture presented itself. A large mass of grayish white necrotic tissue about 10 cm. long and 5 cm. wide occupied the region to the right of the former gallbladder fossa (fig. 1). It appeared as though a sponge might have been left in the abdomen during the previous operation.

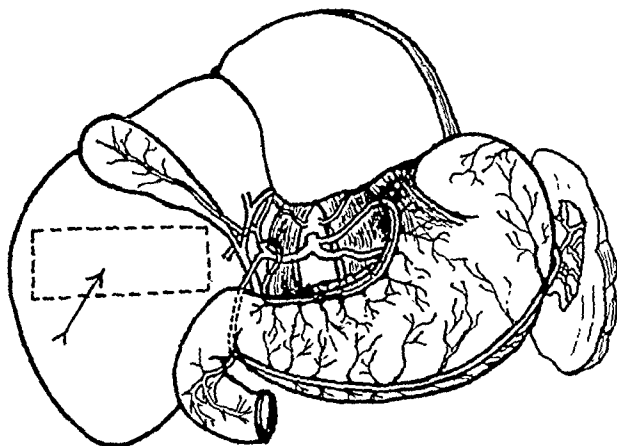


Fig. 1.—Inferior surface of liver, showing location of necrotic mass.

However, with slight traction this sloughing mass was readily withdrawn, exposing a deep cavity in the liver lined with rough granulation tissue. There was no bleeding. An attempt was made to locate the common bile duct but this was abandoned in view of the massive adhesions, the presence of suppuration and the prolonged operation. The cavity was packed and drained with iodoform gauze and the abdomen closed.

The pathologic report by Dr. Max Lederer described an irregular mass of tissue measuring 10 by 3 by 5 cm., soft in consistency and grayish white. On section it was suggestive of hepatic structure. Microscopically the mass was found to consist mainly of necrotic liver tissue, ghosts of blood vessels, and clumps of bacteria. Bordering the necrotic area was a narrow zone of marked leukocytic infiltration. Outside this zone there were still remains of pigmented liver cells (fig. 2), blood vessels and bile capillaries. One large hepatic blood vessel contained an organized thrombus. Its wall was extensively infiltrated with polymorphonuclear leukocytes (fig. 3). The diagnosis was gangrenous liver tissue.

A roentgenographic study with iodized oil, Feb. 21, 1933, by Dr. Milton Wasch revealed a sinus that passed upward and backward almost to the level of the diaphragm. The sinus tracts were too large and coarse (fig. 4) to be considered as involving the biliary ducts, so that he was inclined to think that they were the result of the pathologic process.

Another roentgen examination, March 8, showed a few droplets of the previously injected iodized oil (fig. 5). The wound continued to drain golden yellow bile up to March 26. At this time the drainage practically ceased and the patient

was discharged from the hospital. At present the wound is healed except for a small sinus still discharging a few drops of bile-stained secretion.¹ The patient's general condition is very good.

COMMENTS AND GENERAL CONSIDERATION

Considering the numerous operations performed on the gallbladder, the biliary ducts and their adjacent



Fig. 2.—Section showing remains of liver cells and beginning fibrosis.

organs, it is remarkable that there are so few case reports of injuries to the hepatic vessels and their important branches which are followed by liver necrosis. To interpret properly the unusual phenomenon in the case reported, a thorough understanding of the vascular supply of the liver and the frequent anomalous departures is absolutely essential. Budde^{1a} and Behrend² called attention to certain anomalies of the hepatic artery which are of considerable interest from a surgical point of view. According to Behrend, accidental ligation of the hepatic artery or one of its larger branches, during an operation, may not be an infrequent occurrence. In his extensive studies he was able to demonstrate the following conditions:

1. The hepatic artery proper may be double.
2. There may be many accessory hepatic arteries.
3. The hepatic artery may be tortuous and in close relation to the biliary ducts.
4. The cystic artery may be branched, and these branches may anastomose with one another. It may happen, therefore, that, after ligation of the cystic artery, profuse bleeding may follow from one of its branches. In the confusion that usually follows, the hepatic artery or one of its branches may be clamped, especially when the stem is very short.

Frequency of and Clinical Results Following Ligation of a Branch of the Hepatic Artery.—How often is the hepatic artery or its main branches ligated during an operation? There are probably a great many cases in which ligation of a branch of the hepatic artery was

performed accidentally or intentionally without serious consequences to the patient. Thus, Kehr³ reported an operation on a man, aged 29, for aneurysm of the cystic artery. He found a pulsating tumor the size of a hen's egg at the neck of the gallbladder. The right branch of the hepatic artery was ligated and cut between two ligatures. Two weeks later, while he was redressing the wound, the anterior border of the right lobe of the liver appeared dry and necrotic. After another few days the liver edge separated and exposed a cavity 2 cm. in depth. The patient recovered.

Bakes⁴ also reported a difficult cholecystectomy operation in which the cystic duct and artery were encased in strong fibrous adhesions. During the dissection very severe arterial bleeding occurred, which was controlled by ligation of the vessel. Whether it was the main right branch of the hepatic artery or an accessory vessel could not be determined because of the extensive adhesions. The fact remains that the vessel was an artery and of large caliber. Fourteen days later the wound was clean and the patient was apparently doing well. The author does not state further details of the case.

Narath⁵ operated on a woman for a large chronic penetrating gastric ulcer. Because of the difficulty of the operation, profuse arterial bleeding started at the hilus of the liver. The artery was found, clamped and ligated. A circular gastric resection was performed. The patient lived only six days after operation. On postmortem examination the entire left lobe of the liver was found necrotic. Investigation disclosed a thrombosed and ligated left branch of the hepatic artery. The right branch as well as the right lobe of

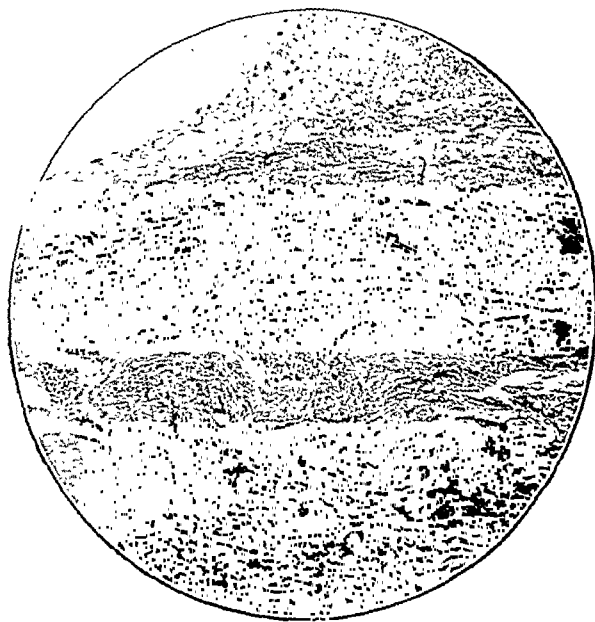


Fig. 3.—Section showing thick walled thrombosed blood vessel with extensive leukocytic infiltration of its wall.

the liver was normal. The cause of death was a perforation through the posterior line of sutures in the stomach anastomosis. Gastric and duodenal contents

1. The sinus is now completely healed.
1a. Budde: Beiträge zur Kenntnis der Topographie der normalen Art. hepatica und ihre Varietäten, Deutsche. Ztschr. f. Chir. 86: 13-40, 1907.
2. Behrend, Moses: Surgical Diseases of the Gallbladder, Liver and Pancreas, and Their Treatment, Philadelphia, F. A. Davis Company, 1927.

3. Kehr, H.: Der I. Fall von erfolgreicher Unterbindung der Art. hepatica propria wegen Aneurysma, München, med. Wchnschr. 50: 1861-1867, 1903.

4. Bakes, J.: Diskussionsbemerkung: Verhandl. d. Deutsch. Gesellsch. f. Chir., thirty-third congress 1: 82, 1904.

5. Narath, A.: Ueber die Unterbindung der Arteria hepatica, Beitr. z. klin. Chir. 65: 504, 1909.

were found free in the peritoneal cavity. Were it not for this accident the patient might have recovered.

Hofmeister⁶ reported a case in which it was necessary to ligate the hepatic artery above the right gastric branch to remove a tumor. Recovery was uneventful.

Mechanism of the Production of Anemic Infarcts in the Liver.—Aschoff⁷ is of the opinion that anemic



Fig. 4.—Sinus tract extending almost to level of diaphragm.

infarcts in the liver are the result of an obstruction to one of the branches of the hepatic artery associated with an inadequate collateral circulation and myocardial insufficiency. According to Kaufmann,⁸ atrophy and extensive necrosis of the liver may follow the occlusion of the portal vein twigs beyond the interlobular anastomoses, or it may occur as a result of the obliteration of the interlobular branches of the portal vein. Henke and Lubarsch⁹ refer to many reports of cases in which anemic infarction of the liver resulted from emboli originating in endocardial vegetations, omental vein thrombi, or infection of the hepatic artery. The most important cause of anemic infarction, however, is occlusion of the hepatic artery.

Experimentally, Cohnheim and Litten¹⁰ studied the hepatic circulation in the rabbit and demonstrated that interference with the arterial flow always resulted in complete necrosis of the liver with rapid death of the animal. Ligation of the artery in the dog may not necessarily be fatal. Haberer¹¹ conducted numerous experiments on dogs, cats and rabbits. He found that ligating the hepatic artery after it gives off the gastroduodenal branch was well tolerated by the animals, because collateral circulation was rapidly established. But on ligation of the hepatic artery after the right gastric branch is given off, liver necrosis and rapid death of the animals occurred. Ligation of the hepatic artery near its origin produced more or less complete

necrosis of the liver. In the animals that survived the operation, Haberer found arterial blood carried to the liver by tiny branches from the diaphragmatic arteries. Doyon and Doufour¹² on the other hand, observed that if the hepatic artery was ligated near its origin, circulation could be reestablished in the liver by way of the left gastric, splenic and superior mesenteric arteries. Loeffler¹³ ligated the hepatic artery in a rabbit and examined the liver at regular intervals. He found that most of the blood of the hepatic artery supplies the biliary ducts, the gallbladder and a small part of the nerves of the liver. According to this author, exclusion of the hepatic artery does not lead directly to necrosis.

Narath,¹⁴ in his classic experiments on the ligation of the hepatic artery, came to the following conclusions:

1. The common hepatic artery may be ligated, provided there is at least one vessel left to start a collateral circulation.
2. Focal necrosis of the liver may follow the ligation of the hepatic artery proper below the origin of the right gastric artery. It should be done only as a life saving measure.
3. The ligation of the hepatic artery proper will lead to liver necrosis.
4. The right or left hepatic branches of the artery should not be ligated except in cases in which an aneurysm exists along the course of the vessel.
5. In case of vascular injury, the ligature should be placed as close as possible to the seat of injury of the vessel in order to avoid ligating any possible collateral branches.

Recently, Zimmermann¹⁵ found that occlusion of the hepatic artery always produced anemic necrosis even



Fig. 5.—Fifteen days later: only a few droplets of iodized oil left in sinus tract.

when a collateral circulation was established. This is the present consensus among most investigators.

6. Hofmeister, I.: *Legatura dell'arteria epatica propria senza documento del fegato*, *Pathologica* 16:109, 1924.
7. Aschoff, Ludwig: *Pathologische Anatomie*, Jena, Gustav Fischer 2: 872, 1928.
8. Kaufmann, Edward: *Pathology for Students and Practitioners*, Philadelphia, P. Blakiston's Son & Co., 1929.
9. Henke, F. and Lubarsch, O.: *Handbuch der speziellen pathologischen Anatomie und Histologie*, Leber, vol. 5, part 1, Berlin, Julius Springer.
10. Cohnheim, Julius, and Litten, M.: *Ueber Circulationsstörungen in der Leber*, *Virchows Arch. f. path. Anat.* 67:163, 1876.
11. Haberer, Hans: *Experimentelle Unterbindung der Leberarterie*, *Arch. f. klin. Chir.* 78:557-587, 1905.

12. Doyon and Doufour: *Contribution à l'étude de la fonction uréopoiétique du foie; effets de la ligature de l'hépatique et de celle de la veine porte*, *Arch. de physiol. norm. et path.* 10:522, 1898.
13. Loeffler, Louis: *Leberstudien (Die Folgen der Unterbindung der Leberarterie)*, *Virchows Arch. f. path. Anat.* 266:65-98, 1927.
14. Narath, Albert: *Die Arteriovenöse Anastomose an der Pfortader als Mittel zur Verhütung der Lebernekrose nach Unterbindung der Arteria hepatica*, *Centralbl. f. Chir.* 42:1-4, 1915.
15. Zimmermann, H. M.: *Leberinfarkte und der Mechanismus ihrer Entstehung*, *Centralbl. f. allg. Path.* 50:158, 1931.

Clinical Results Following Sequestration of Liver Tissue.—Graser¹⁶ reported a laparotomy on a man, aged 49, who showed signs of a rapidly growing sarcoma of the spleen with cystic degeneration. The operation revealed a large subphrenic abscess with sequestration of portions of liver tissue. On being questioned as to any previous abdominal injury, the patient stated that he fell from a height of about 15 feet, nine months before, and was unconscious for many hours. The patient recovered from the operation.

Nordmann¹⁷ reported an operation on a youth, aged 18, who accidentally fell out of a third story window. The operation revealed a large quantity of blood in the abdomen, and a mass of liver tissue the size of a hen's egg, free behind the upper right lobe of the liver. The liver laceration was packed with iodoform gauze. A subphrenic abscess developed. After twenty days more sequestrums of liver tissue were found and removed with the packing. The patient recovered.

Fertig¹⁸ reported two cases of sequestration of liver tissue. The first case was that of a man, aged 21, who received an abdominal injury. Nineteen days later at laparotomy a large subphrenic abscess was found. It was packed with iodoform gauze and the wound continued to drain bile profusely for seven weeks. The patient did not fare well. Fifteen weeks later a mass of necrotic liver tissue was drawn out from the wound with the packing. Thereafter convalescence was rapid and the patient made a complete recovery. The second case was that of a boy, aged 14 years, who was injured when the rear wheel of a wagon passed over his abdomen. At operation, forty-eight hours later, a ruptured liver was found with almost complete separation of the left lobe, except for the coronary ligament. The lobe appeared pale, yellow and bloodless. The laceration was packed with iodoform gauze, walling off the left lobe with the expectation that it would sequestrate. Fifty-four days later while the packing was being changed, the entire left lobe of the liver was pulled out. The patient made an uneventful recovery.

Biernath¹⁹ reported the case of a man, aged 25, who received a crushing blow to the upper part of the abdomen. At operation, almost complete separation of the right from the left lobe of the liver was found. The tear was packed with iodoform gauze. Two weeks later, while the packing was being changed, the necrotic left lobe of the liver was pulled out. The patient made a complete recovery.

Large anemic infarcts of the liver often heal by encapsulation and absorption. Thus, Chiari²⁰ reported a case in which a man received a crushing blow to the abdomen but was not operated on. He died later, however, of a severe gastric hemorrhage. At autopsy the right lobe of the liver appeared normal but the left lobe was missing. The injured surface was covered with fine granulation tissue. The torn ends of the hepatic vessels were thrombosed. Near the spleen, a necrotic mass was found measuring 16 by 10 by 4.5 cm. On section it was recognized as the missing left lobe of the liver. In the stomach along the lesser curvature a deep peptic ulcer was found, measuring 2 cm. in

diameter and exposing at its base the eroded stem of an artery about 1 mm. in diameter.

SUMMARY AND CONCLUSIONS

In the case reported here, a large liver sequestrum was removed at a second operation two months after a primary cholecystectomy.

Accidental ligation of the hepatic artery or one of its larger branches will cause anemic infarction, with sequestration of liver tissue.

Anomalies of the hepatic artery or its branches or their anomalous course may be responsible for accidental ligation.

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CONGENITAL AIR CYST OF THE LUNG

REPORT OF CASE

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AND

J. CASH KING, M.D.

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For two and a half years we observed a 3 year old boy, whose entire left thoracic cavity was filled with a balloon-like cyst. His condition varied from that of threatened asphyxia to that of restful normal breathing, relief being effected only by aspirating from 8,000 to 10,000 cc. of air from this sac every four to six hours. During the periods of relief, he was able to take nourishment and rest as if in preparation for the exhausting symptoms that were sure to return.

Few large solitary air cysts or "balloon cysts" of the lung have been reported in the American literature. This is shown by Koontz,¹ who made an extensive review in 1925 and tabulated 108 cases; of these, only 7 were of the large solitary type. We have found twelve additional cases reported in the American literature since 1925. The case reported here brings the total to 121 to the present time. It is interesting to note that these cysts are usually unilateral and develop in the left lung far more frequently than in the right. The present case is of interest because the patient has made an apparent recovery from a condition that usually terminates fatally when it occurs at this early stage of life, and the results obtained seem to suggest some worth-while therapeutic measures.

REPORT OF CASE

History.—N. D., a white boy, aged 3 years, was the second child of normal, healthy parents. At birth he weighed 8 pounds (3,630 Gm.). Until he was 5 months of age, he was in good health; at that time he had an acute illness, which was diagnosed as bronchial pneumonia. He recovered completely from this condition and, with the exception of frequent colds, remained well until he was 12 months of age. Then for three consecutive months similar pulmonary infections developed, the last of which was complicated by a left otitis media that necessitated myringotomy. At this time the child expectorated large amounts of thin yellow pus, an ounce frequently being raised during a paroxysm of coughing. Although the acute manifestations of the last illness subsided, dyspnea of an asthmatic type persisted. This dyspnea continued and the child became weak and apathetic.

Examination.—The infant was cyanotic and markedly dyspneic; there were a definite expiratory grunt and frequent attacks of coughing. These were all exaggerated when he cried. The physical observations, with the exception of those of the chest,

16. Graser, E.: Ueber traumatische Leberruptur mit späterer Ausstossung grosser Lebersequester, Arch. f. klin. Chir. 74: 533-538, 1904.

17. Nordmann, C.: Ein Fall von Leberruptur, Centralbl. f. Chir. 8: 24, 1908.

18. Fertig, J.: Traumatische Leberrupturen mit späterer Ausstossung grosser Lebersequester, Deutsche Ztschr. f. Chir. 87: 87, 1907.

19. Biernath, P. K.: Ueber subkutane Leberruptur mit späterer Ausstossung grosser Lebersequester und deren Behandlung, Arch. f. klin. Chir. 90: 73, 1909.

20. Chiari, H.: Ueber eine in Spontanheilung begriffene totale Abreissung des linken Leberlappens, Berl. klin. Wchnschr. 36: 1629, 1908.

1. Koontz, A. R.: Congenital Cyst of the Lung, Bull. Johns Hopkins Hosp. 37: 340-361 (Nov.) 1925.

were unimportant. His temperature was 101 F. (rectal); pulse, 140; respiration rate, 70. The thorax was barrel-like; the left side was more distended than the right and moved through a more limited area. This fullness extended down over the left epigastrium. Cardiac dullness was displaced, with the apex to the right of the lower border of the sternum. The heart sounds were distant and rapid. The entire left and the upper part of the right chest were hyperresonant. Breath sounds were absent over the left side of the chest but exaggerated over the right lung posterior and in the axillary region.

Examination of the blood revealed: white blood cells, 9,750; polymorphonuclears, 40 per cent; lymphocytes, 55 per cent; eosinophils, 2 per cent; large monocytes, 3 per cent, and hemoglobin, 80 per cent. Analysis of the urine was negative. On all occasions the Kahn and Wassermann reactions were negative. The Mantoux test was negative in dilutions of 1:1,000 and 1:500.

A roentgenologic consultation revealed that there was complete absence of normal lung tissue in the left side of the chest. This entire cavity was filled with air, which had displaced the heart and the mediastinal structures well over to the right. The left side of the diaphragm was displaced downward and there appeared to be a herniation of this air sac through the anterior superior mediastinum, producing a balloon-like projection that extended almost to the parietal pleura. On fluoroscopic examination it was evident that air pressure in the left side of the chest became greater during inspiration. The right lung was displaced laterally and completely collapsed, except for a small portion of the middle and lower lobes (figs. 1 and 2).

The probable diagnosis was complete pneumothorax on the left with a patent bronchial connection; the air trapped in the left pleural cavity was under marked pressure.

During the patient's hospitalization, several consultations were held. Various diagnoses were made, including bilateral pneumothorax, obstruction of the main bronchus by a foreign body, and diaphragmatic hernia. Bronchoscopic examination failed to reveal any foreign body but showed that the left main bronchus was stenosed as if from outside pressure. Following this investigation it was agreed that the child's outlook was nearly hopeless. No relief was obtained until after 4,000 cc. of air was aspirated from the left lung. A final diagnosis was not made until we had read the article of Parmalee and Apfelbach² reporting a case of congenital air cyst of the lung.

Further inquiry into the literature proved most discouraging, as in all the reported cases of this type the patient had lived only a short time and in the majority the diagnosis was not made until necropsy.

In spite of these reports, however, we were able to keep the child alive by aspirating air every four to six hours. This procedure was facilitated by the use of a special one-way valve mechanism assembled with a tube into the cyst cavity.



Fig. 1.—Air cyst replacing the left lung and extending through the anterior superior mediastinum, displacing the entire upper lobe of the right lung. There is a displacement of the heart to the right of the midline.

Realizing that our therapy was transient in character and offered only temporary relief at best, we decided that if relief was to be permanent it had to be obtained through some surgical measure. Dr. Graham of St. Louis was consulted. The diagnosis of air cyst of the lung was confirmed by injecting iodized poppy-seed oil into the cyst cavity; this procedure also proved that the air sac over the right upper portion of the chest was a part of the cystic cavity of the left lung. It was concluded that surgery was inadvisable because of the extensive involvement and because of the gravity of the patient's general con-

dition. A hopeless prognosis was given, and we were advised to continue with the treatment.

Seven days after the iodized oil was injected the child appeared much better. Aspiration of the chest on this date yielded only 500 cc. of air, the removal of which seemed to produce cyanosis. No more aspirations were done until four days later, at which time fever of 105 F. developed. The chest was again aspirated, and 30 cc. of thick, straw colored fluid was obtained. The hyperpyrexia continued for several days, but the child improved steadily. The dyspnea subsided, which promoted rest and made it possible for the patient to retain enough nourishment to begin to gain. Another roentgen examination revealed a cystic air sac almost completely collapsed (fig. 3). The right lung and mediastinal structures had returned to their normal positions. The cyst proper and the left pleural cavity still contained most, if not all, of the iodized oil. The child's progress has been satisfactory and uneventful to date (Jan. 19, 1933), except for one acute infection of the upper respiratory tract (fig. 4).

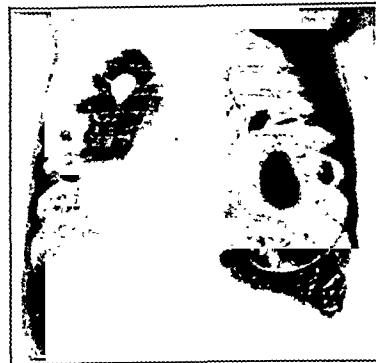


Fig. 2.—Anteroposterior view of the chest after the injection of iodized poppy-seed oil into the cyst cavity. The film was made two months after the one shown in figure 1. The iodized oil injected through the left chest wall could be shifted to any part of the large cyst by changing the position of the child.

COMMENT

This case of congenital air cyst of the lung is of unusual significance in that the patient apparently has made a complete recovery. The majority of infants in whom the abnormality had been reported previously lived only a short time after the onset of symptoms.

Congenital cystic disease of the lung occurs in two forms: (1) the solitary cyst, which is usually large, and (2) the multiple small cysts, which involve a part or all of a lung. In the former type, when symptoms do occur in childhood, they are, as a rule, extremely severe and carry a grave prognosis.

The following symptoms should lead one to suspect congenital cystic disease of the lung: unexplained attacks of dyspnea and cyanosis with the signs of pneumothorax; i. e., hyperresonance and greatly diminished breath sounds on the affected side and exaggerated breath sounds and displacement of the heart and mediastinum to the opposite side. Especially significant are these symptoms when the past history discloses recurrent periods of labored breathing and when no evidence of pulmonary infection or trauma is present to explain the development of pneumothorax. The roentgenograms will in most cases show a large air sac that often replaces the normal lung tissue of an entire lobe or lung, suggesting at first glance partial or complete pneumothorax on the affected side. The diagnosis should be made from the history and roentgen observations. The differential diagnosis includes pneumothorax, diaphragmatic hernia, and foreign body in one of the larger bronchi with a resulting atelectasis. The clinical difference between this condition and pneumothorax with patent bronchial connection cannot be made by physical examination. It is only by a close study of the roentgenograms that a definite difference can be demonstrated. The roentgenogram of pneumothorax shows the lung stump at the hilus, and the diaphragm often curves downward rather than upward. In cystic

2. Parmalee, A. H., and Apfelbach, C. W.: Congenital Air Cyst of the Lung, *Am. J. Dis. Child.* 41: 1380-1388 (June) 1931.

disease of the lung there is usually an outline of the cyst wall shown on the film. Roentgen studies after injections of iodized poppy-seed oil, as used in our case, will often be of material aid in making a correct diagnosis, and it is possible that it has some therapeutic value. The multiple type of congenital cyst of the lung may produce symptoms during infancy, but the cases reported in the literature indicate that this type of the disease is discovered more often during adolescence or adult life. The symptoms are usually not so sudden in onset and do not always indicate the true gravity of the condition. However, in cases in which the cysts are so diffusely distributed that they replace an appreciable portion of normal lung tissue the symptoms may be as severe as those observed in the active state of the large solitary type. This was true in Nelson's case.³ The roentgenograms vary considerably in appearance from time to time in the same case, as is explained by the variation in the amount of fluid present in the cystic cavities. Here the differential diagnosis must include lung abscess and empyema, as well as the other conditions mentioned under this heading in the large solitary cyst.

ETIOLOGY

Numerous theories have been presented as to the etiology of congenital cyst of the lung, most of which

ectatic cavity, which produces no symptoms and no abnormal physical condition at birth, gradually grows in size as the infant breathes. At the bronchial opening is a one-way valve mechanism that allows air to enter the sac and inflate it but does not allow a corresponding deflation to take place. As the cavity grows in size, the bronchial radicle or radicles leading to it become more and more tortuous as they are compressed toward the hilus, thus increasing the interference with deflation. By the time the child reaches a few months of age, the sac becomes so large that respiration and circulation are embarrassed sufficiently to produce dyspnea and cyanosis.

Parmalee and Apfelbach² advance this theory for their case.

Another possible course of events that has occurred to us is as follows: During fetal life and a variable period of natal life, these cysts contain fluid and do not have a patent bronchial connection; then, at a certain stage, depending on the rapidity of growth and the size of the cyst, it ruptures into one or more of the bronchi, at which time the fluid contents are coughed up and replaced by air. On account of the abnormal bronchial opening, which has a definite one-way valve-like action, a sudden increase in the intracystic pressure occurs, thus bringing about a rapid growth. This causes

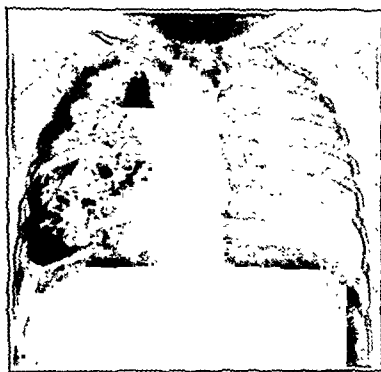


Fig. 3.—The chest twenty-four days after the iodized oil was injected and seventeen days after the symptoms and signs of air hunger had subsided. This is very similar to the film obtained twelve hours after relief from symptoms occurred. The cyst has not completely collapsed and some pneumothorax is noted, the latter probably being due to the repeated aspirations.



Fig. 4.—The cyst cavity collapsed and the lung well aerated, seven months and sixteen days after iodized oil was injected.



Fig. 5.—About thirteen months after iodized oil was injected. The child was free from symptoms more than twelve months.

postulate an embryonic defect in the development of

a sudden onset of symptoms after the child is several months or years of age, although the condition has been present since birth.

SUMMARY

The points of outstanding interest in a case of congenital air cyst of the lung in which observations were recorded over two years are: (1) the remarkable anatomic and pathologic changes that occurred in the lungs; (2) the relation of symptoms and signs manifested by the child during the time these changes occurred; (3) the fact that the child has been completely free from symptoms for twenty-four months and is developing like a normal child.

CONCLUSION

In the case here reported the patient has at least made a temporary recovery which has been remarkable and unexpected. The questions arise: 1. Is the recovery permanent? 2. If so, to what particular therapeutic measure, if any, is the patient indebted? 3. If this cure is not permanent, will future attacks be as acute and as severe? We have ventured a hopeful but guarded prognosis.

1052 Madison Avenue—915 Madison Avenue.

3. Nelson, R. L.: Congenital Cystic Disease of the Lung, *J. Pediat.* 1: 233 (Aug.) 1932.

4. De Lange, Cornelia: Angeborene Zystenlunge und agenetische Bronchiectasie, *Acta. pediat.* 6: 352, 1927.

5. Smith, S.: Congenital Cystic Diseases of the Lungs, *Brit. M. J.* 1: 1005 (May 30) 1925.

GASTRIC EXAMINATION IN PULMONARY TUBERCULOSIS WITH
NEGATIVE SPUTUM

DIAGNOSTIC IMPORTANCE

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AND

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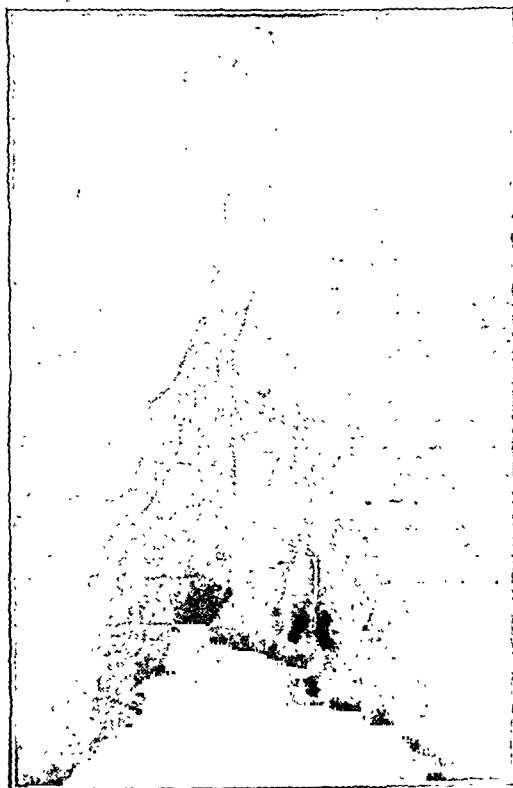
NEW YORK

Recently there came under our observation a patient who had the obvious end-result of an extensive caseous-pneumonic tuberculosis¹ involving one entire lung. In spite of numerous coarse moist râles throughout that lung there was but slight expectoration. Examination of the sputum was repeatedly negative. Shortly after this incident another patient was seen who had a minimal lesion in the right apex. The pathologic condition was apparently productive in nature. Examination of the sputum was repeatedly negative. In spite of the negative sputum examinations, this patient suddenly developed a bronchogenic spread to the opposite lung. Not even at this time could tubercle bacilli be demonstrated in the sputum. Assuming in the first instance that the very nature of the pathologic condition made the presence of tubercle bacilli a foregone conclusion, and assuming in the second instance that the pathogenesis of the affair demanded free bacilli in the bronchial tree, we decided to institute a more complete search for the tubercle bacilli. Accordingly, an examination of the gastric contents was made on the theory that the sputum might have been inadvertently swallowed. Both cases showed the presence of tubercle bacilli in the gastric contents. The stimulation afforded by the success obtained in these two instances led us to attempt this diagnostic procedure in other cases. Our results are presented in detail later.

It is interesting to explain the mechanism whereby the bronchial secretion gains entrance to the stomach. As has been shown by the anatomic review of the musculature of the bronchi and lungs by Macklin,² there is an extensive network of muscle fibers throughout the respiratory tract. In the trachea the fiber bundles are mainly transverse, being attached to the inner aspect of the cartilaginous ring, although there is some crisscrossing to higher or lower levels. With the change in structure that is observed in the arrangement of the cartilage as the main and stem bronchi are reached, so also is there a change in the arrangement of the muscle bundles. The fibers tend to course in a more longitudinal or rather spiral direction so that the whole tube now becomes surrounded by a rather loose basket-weave of contractile tissue. This arrangement continues down to the terminal bronchiolus respiratorius, where the muscle fibers disappear. The whole muscle system is intimately associated with elastic fibers, so that the structure has been termed by some "myo-elastic." This layer of contractile tissue is vitally and actively important in the normal functioning of the lung. Its relation to the change in size and shape of the air conducting system with the lung changes that

occur on inspiration and expiration has been fairly well studied and known.

A related but not so well recognized function exists in the expulsion of foreign material from the airway. Bullowa and Gottlieb³ mentioned a bellows-like action of the bronchi. Reinberg⁴ observed a peristaltic-like action of the trachea which produced the expulsion of foreign material without the necessity of cough. It remained for Hudson,⁵ making use of rapid successive x-ray exposures, to demonstrate graphically this phenomenon. Using iodized oil, he noted a regular narrowing of all bronchi that seemed to originate in the peripheral portion of the bronchial tree and to be associated with the propulsion of oil toward the trachea. During expiration, the walls lost their parallel relationship and at the end of expiration in some areas the walls almost touched, a condition that was regarded as



Iodized poppy-seed oil was injected into the trachea by means of a catheter passed between the vocal cords. This shows the iodized oil in both the tracheobronchial tree and the esophagus. There is an actual spilling over of the iodized oil from the trachea into the esophagus. The patient did not cough at any time.

suggestive evidence of peristalsis. From its action on the oil, says Hudson, "it would seem that it was sufficient to empty the bronchial tree of secretions under ordinary circumstances without invoking other aid."

Since our attention has been focused on this phenomenon, we have observed several striking examples. The first case was a rather embarrassing experience for the moment. Following the injection of iodized poppy-seed oil into the bronchial tree by means of the bronchoscope, a roentgenogram demonstrated the presence of the entire amount of oil in the stomach. At no

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1. The term caseous-pneumonic tuberculosis is used as defined under that heading in Ornstein, G. G.; Ulmar, David, and Dittler, E. L.: A Clinical Classification of Pulmonary Tuberculosis, *Am. Rev. Tuberc.* 23: 248 (March) 1931.

2. Macklin, C. C.: Musculature of Bronchi and Lungs, *Physiol. Rev.* 9: 1-60 (Jan.) 1929.

3. Bullowa, J. G. M., and Gottlieb, C.: Additional Expectoration Studies in Bronchial Function, *Laryngoscope* 39: 201-209 (April) 1921.

4. Reinberg, S. A.: Roentgen-Ray Studies on the Physiology and Pathology of the Tracheobronchial Tree, *Bull. J. Radiol.* 10: 151-154 (Dec.) 1925.

5. Hudson, W. A., and Jaffe, H. A.: Cine-Fluoroscopic Studies of the Tracheobronchial Tree, *Arch. Surg.* 101: 1236-1241 (Dec.) 1935.

time did the patient cough. This was so striking that some question was raised at the time as to whether or not the oil was directly injected into the stomach. We can definitely state, however, that this was not the case. Since that time we have been fortunate enough to obtain a roentgenogram in two instances showing the actual spilling over of the iodized oil from the trachea into the esophagus. There was no coughing at any time. In one case the peristaltic action of the trachea was so marked that one of a group of nurses, watching the injection of iodized oil under the fluoroscope, asked spontaneously if the patient was vomiting—a striking reminiscence of the tracheal vomiting of Reinberg. We reproduce the roentgen study of one of these cases. The film shows the iodized oil in both the bronchial tree and the esophagus. The injection was done by means of a catheter passed between the vocal cords into the trachea. At no time did the patient cough.

TECHNIC OF PROCEDURE

The gastric contents are obtained in the early morning before the ingestion of any food. The purpose of this is twofold. In the first place, the gastric contents are not unduly diluted by food and gastric secretion. In the second place, gastric peristalsis is minimized so that whatever has gained entry into the stomach during the sleeping period at night is more likely to remain there. From a practical standpoint in our hospital services, the directions are simple. The patient is not allowed up in the morning nor is breakfast given till the gastric contents are obtained. This is done at 7 a. m. A stomach tube is passed and the fasting contents are obtained. The stomach is then lavaged with about 100 to 200 cc. of water. The combined volume is then centrifugated for one hour. To the sediment an equal volume of 4 per cent sodium hydroxide is added. After about thirty minutes in the incubator at 38 C., the digested mixture is centrifugated for another hour. The sediment from the second mixture is then smeared on slides and stained for tubercle bacilli.

We believe that these observations are of considerable practical significance in the diagnosis of tuberculosis. In the introduction we mentioned that the routine sputum examinations in two cases were negative for tubercle bacilli, while the gastric contents showed the presence of organisms. In view of the evidence just submitted, it is highly questionable whether the examination was done on sputum at all, if one regards sputum as the bronchial contents. In all likelihood the real sputum was carried by this peristaltic action up the bronchial tree and over into the gastrointestinal tract without being expectorated. This phenomenon probably also explains the surprising lack in some cases of coughing and expectoration which the physical signs would lead one to suspect. We believe that this simple diagnostic procedure is so important that we do not consider the patient bacillus free until the gastric content as well as the sputum is so found. This is also of especial importance in those cases in which the normal cough mechanism has been interfered with. Pneumothorax or thoracoplasty cases cannot produce the usual high velocity jet of air to clear the bronchial tree of secretion. Bronchial peristalsis accordingly becomes of much greater significance and value. No case of this type should be given a clean bill without an examination of the gastric contents.

To date, we have examined a total of 287 patients at both the Metropolitan and the Sea View Hospital.

excluding 14 cases with no demonstrable pulmonary pathologic condition, 11 nontuberculous cases and 3 positive sputum cases, all of which were used as controls; the remaining 259 cases yielded on gastric examination 55 positive results, a percentage of approximately 20. When one considers that all these cases were repeatedly sputum negative both on plain smear and on concentration, one can realize the importance of the observations. A deeper analysis of the figures still further raises the significance of the results. The cases studied at the Sea View Hospital included a large number of postoperative sputum negative thoracoplasty cases. These yielded negative gastric results. At the Metropolitan Hospital, the gastric examinations were done solely as a diagnostic aid and in this group the positive results totaled 30 per cent. Since completing this study, we have been fortunate in finding a similar line of investigation by two Spanish workers, Eizaguirre and Uralde,⁶ who report nine positive gastric examinations out of twenty-one negative sputum cases—a percentage of 42.8. This percentage of positive results is rather high when compared with our series. We believe it is due to the comparatively small number of cases investigated. The degree of success in our Metropolitan Hospital series, in which 30 per cent yielded positive results, we believe to be a fair index of the value of the gastric examinations. Mere numbers, however, can never duplicate the startling shock that one gets when a single gastric examination shows the presence of tubercle bacilli after repeated sputum examinations during the course of a year have always been negative—an occurrence that has presented itself to us several times. As a result of our investigation, we believe that this diagnostic aid is sufficiently valuable to warrant its routine use in all suspected cases in which the sputum is negative.

SUMMARY

A search was made of the gastric contents for tubercle bacilli in pulmonary tuberculosis. The mechanism of bronchial peristalsis is demonstrated whereby bronchial contents are raised to the level of the larynx without the mechanism of cough. The importance of this mechanism in raising sputum from the lungs is amply shown by the fact that, in a series of 287 cases in which there were repeated negative sputum examinations, approximately 20 per cent yielded tubercle bacilli on examination of the gastric contents. In some of these positive cases there was no previous coughing and expectoration. The importance of this method of investigation becomes increasingly significant when the normal cough mechanism has been interfered with as, for example, in pneumothorax or thoracoplasty cases. The simplicity of the examination, which consists merely in the usual concentration technic on the aspirated gastric contents, makes the examination so easy as to warrant its routine use in all suspected sputum negative cases.

75 Central Park West—115 Central Park West.

6. Eizaguirre, E., and Uralde, F. L.: Investigation of Koch Bacilli in the Gastric Contents in Pulmonary Tuberculosis, *Rev. espan. de tuberc.* 2: 327, 1931.

The Oxygen in High Altitudes.—Argyll Campbell found that acclimatized animals could live at a tension of oxygen in the inspired air of 53 mm. Hg, but degeneration of the heart and other organs resulted on prolonged exposure to this tension, which corresponds to that at the top of Mount Everest.—Hill, Leonard: Altitudes to be Reached When Breathing, *Quart. J. Exper. Physiol.* 23:45 (Aug. 10) 1933.

STUDIES OF THE VISUAL FIELDS IN FUNCTIONAL HEADACHES OF PITUITARY ORIGIN

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While a study was being made of headaches which had been treated in the past six years with the roentgen rays and glandular extracts, the similarities of the visual field were strikingly alike and seemed of enough importance to report. Headache as a symptom is probably the most common complaint which brings the patient to the ophthalmologist. In a few cases in which correction of the refractive error did not relieve the cephalalgia, a study made with the aid of the internist, the roentgenologist and visual fields led to the belief that these headaches are of pituitary origin.

Pituitary headaches as described by Engelbach and Tierney¹ is a term "not to be used to apply to the type of headache caused by neoplasms of the pituitary or other brain tumors." It has been established by these authors that the pituitary gland, almost equally with the thyroid, is concerned in the initiation and maintenance of the functions of sex glands, particularly in the female. The added demands on the pituitary gland during the periods of adolescence, pregnancy and menopause cause temporary hyperemia and enlargement of it, with a consequent compressure of the gland within its close fitting capsule and sella turcica.

Cushing² has attributed the pituitary headaches to the distention of the capsule, and in his book on "The Pituitary Body and Its Disorders" describes two cases (XXVI and XXXVI) in which the subjective symptoms were immediately relieved by splitting the tense capsule of the moderately enlarged gland.

Zentmayer³ in 1917 stated that there are few cases of any abnormal state of activity of the pituitary involving either one or both lobes which did not have some ocular symptoms. The ocular disturbances are manifested by headaches and tiring of the eyes on near use, or headache after minimum fatigue.

Tilney and Riley⁴ described the hypophysis cerebri, which varies in weight from 3.5 to 4.5 Gm. and consists of two portions, the anterior and the posterior lobe. The gland is derived from an epithelial pouch which buds off from the roof of the buccopharyngeal cavity; this process meets and partly envelops a corresponding prolongation (infundibular) from the adjoining base of the anterior cerebral vesicle.

This combined neuro-epithelial structure becomes enveloped in an adherent dural capsule and occupies the sella turcica. The dural capsule in man has an upper diaphragm which stretches from the four clinoid processes and is perforated for the passage of the infundibular stalk. It is capable of distention upward under the diaphragm and laterally toward the cavernous sinuses, but any considerable enlargement anteroposteriorly can take place only with deformation of the bony sella itself. Under certain conditions of stasis or glandular involution, the secretory products may become encysted, inspissated and insoluble, just as in the case of involutinal colloid transformation which Marine has described for the thyroid acini.

Professor Schaeffer,⁵ in a study of 125 anatomic cases, reported that in 96 per cent the optic chiasm was located either wholly or partly over the diaphragm of the sella and underlying hypophysis; in 79 per cent of the instances the anterior and often the greater part of the chiasm had the diaphragm-hypophyseal relation, the dorsal and lesser part projecting variously over and behind the dorsum sellae; in 12 per cent the entire chiasm rested over the diaphragm and subjacent hypophysis; in 5 per cent the dorsal part of the chiasm rested on the diaphragm, the anterior part resting in the chiasmatic sulcus; in 4 per cent of the bodies the entire optic chiasm was located behind the diaphragm of the sella, resting on the dorsum sellae, and projecting behind it.

Erdheim and Stumme⁶ have demonstrated the enlargement of the hypophysis in pregnant women, by a control autopsy report of those who died during pregnancy. They showed that the average weight of the pituitary gland was from 6.18 to 7.5 Gm.; after the first pregnancy it was 8.47 Gm., and in the multiparous, its average weight was 10.6 Gm., the maximum weight being 16.5 Gm.

Definite physiologic functions have been attributed to the hypophysis from studies made on dogs after partial and complete hypophysectomies and correlation of the symptoms and pathology after removal of tumors in man. The function of the anterior lobe seems to regulate the development of the osseous growth and of the sexual characteristics and to aid in the maintenance of the general metabolic condition.

The secretions of the posterior portion or infundibular process influence carbohydrate metabolism, the urinary output and, to some extent, the general disposition.

These hormonal signs vary according to the time of appearance, before or after adolescence, and the symptoms may be classified as due to a hypofunction or a hyperfunction of either lobe or involvement of the whole gland.

It is well known that pregnancy and the menopause are coincident with the onset of many pituitary disturbances and that these changes are included as etiologic factors in diseases of this gland. Typical periodic attacks of pituitary headaches frequently have their onset during the development of menstruation, pregnancy or the menopause.

Pardee⁷ stated that ". . . there can occur a disproportion between the pituitary body and the sella with the production of pressure on the sensory nerves to the dura; and by its encroachment on the cavernous sinuses it may cause interference with the cerebral circulation, the whole setting up the train of pituitary symptoms, including the headache."

The familiar syndrome of pituitary tumor, consisting of headaches, somnolence, mental dulness, polyuria, increased sugar tolerance, glycosuria, oculomotor palsies, bitemporal hemianopia, evidence of disturbed bony metabolism, adiposity and sexual regression, is usually recognized. The functional headache, which Gower describes as one that does not prevent sleep, is often left to the patient to tolerate as best he can.

Read before the Section on Ophthalmology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

1. Engelbach, William, and Tierney, J. P. L., in Tice, Frederick: Practice of Medicine, Hagerstown, Md., W. F. Prior Company, Inc., 1921, vol. 8.

2. Cushing, Harvey: The Pituitary Body and Its Disorders, Philadelphia, J. B. Lippincott Company, 1912.

3. Zentmayer, William: The Eye and the Endocrine Organs, J. A. M. A., 69:1 (July 7) 1917.

4. Tilney, F., and Riley, H. A.: Anatomy of the Nervous System, ed. 3, New York, Paul B. Hoeber, Inc., 1923.

5. Schaeffer, J. Parsons, quoted by de Schweinitz (footnote 8).

6. Erdheim and Stumme: Ueber der Schwangerschaftsveränderung der Hypophyse, Beitr. z. path. Anat. u. z. allg. Path., 46: 233, 1909.

7. Pardee, Irving H.: Pituitary Headaches and Their Cure, Int. Med., 23: 174 (Feb.) 1919.

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8	F	40	Frontal and bitemporal 20 years	R. + 1.00 w + 1.50 ax 100 = 1.2 L. + 75 w + 1.50 ax 90 = 1.2	R. and L. superior temporal for red R. and L. superior for form
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Treatment of all the patients was carried out by the internist (table). Two patients (cases 1 and 4) responded immediately and favorably to the roentgen treatments, and it has not been found necessary to give pituitary products. The patients in cases 2, 3, 5 and 6 were given an anterior lobe pituitary preparation or whole gland for short periods, and to the time of writing have had no recurrences of the severe periodic attacks. The patient in case 10 has never been able to cooperate fully owing to her financial condition, but she did improve with general hygienic procedures, such as rest and a high vitamin diet plus cod liver oil. In case 7 the headaches were slightly less severe, but the frequency of the attacks remained the same under treatment. The patient in case 8 must take the anterior lobe pituitary preparation continuously to be free from headaches. There has been no recent report from the patient in case 9.

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"If headache is not produced or accentuated then the opposite temple can be treated in about four or five days with all factors being the same except the portal of entry is increased to 10 centimeters square and the skin focal distance reduced to 12 inches. This will give a dose equivalent to 20.6 r per minute or a total dose of 164.8 r. Two weeks later two treatments are again administered, one over the right temple and one over the left temple, with four or five days separating the two treatments.

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SUMMARY

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Such functional headaches were the ones chosen for study six years ago, and the roentgenograms demonstrated the four types of sella as described by Pardee: (1) the normal, (2) the contracted, (3) the closed, in which the clinoid processes are in apposition, and (4) those in which there is erosion of the anterior or posterior clinoid processes. Too much emphasis cannot be placed on the type of sella, but a roentgenogram is of great benefit in ruling out a pituitary tumor and also as a matter of record in the future study of this condition, as no doubt tumors may develop in some of the cases.

De Schweinitz⁸ has described the headache caused by tumors of the hypophysis; the pain may be: (1) occipital and radiating, with or without nausea and vomiting, (2) parietal, radiating to the top of the skull, (3) primarily frontal and later bitemporal, increased on tipping the head sideways, (4) bitemporal to intratemporal, and (5) unilateral and temporal, simulating migraine. The same types of pain were found in the headaches of this series of cases, and the pain had persisted for many years in varying intensity. The character of the pain was boring, and the pain was continuous for from a few minutes to forty-eight hours or longer; it frequently was present on awakening in the morning, and usually increased with the use of the eyes for any near work. The cephalalgia was often associated with varying degrees of mental confusion and lack of power to concentrate, and in one case use of the eyes for near work had been impossible without great pain for twenty years. In the female patients in whom it was most often found, the same type of pain frequently occurred during the three or four days before menstruation or at a time of physical exhaustion. The severity of the cephalalgia and associated ocular symptoms seems proportionate to the dysfunction.

Dysfunctions of the pituitary gland often follow severe acute infections (typhoid fever), and such symptoms as headache and obesity may have their onset at such a time.

In simple glandular dysfunctions the headache and ocular discomfort were often the only symptoms complained of, yet, on physical examination, hyposecretion of the anterior lobe with anatomic findings were evident. The changes may be divided into those found in the preadolescent and those in the postadolescent stage. The osseous growth in the preadolescent stage is retarded, and the patient may be short or may have a small head, feet and hands with tapering fingers. The muscular development is proportional. The gonads are infantile, and in female patients amenorrhea or dysmenorrhea may be present. The secondary sex characteristics may be absent, mentality retarded, the temperature subnormal, the pulse slow and the blood pressure somewhat lower than normal. According to Engelbach and Tierney¹ the contracted or closed sella turcica is a rather constant sign in the preadolescent type of hypopituitarism.

In postadolescent hypofunction of the anterior lobe, the stature may be normal or tall, the gonads are normal, and the secondary sexual characteristics are present, but there may be a tendency toward impotency with the more advanced dysfunction. The muscular development is normal, but there is an increased fatigability. There is an average mental ability. The temperature is subnormal, the pulse slow, and the blood pressure low or normal.

Deficiencies of the posterior lobe may be recognized by the history of rather sudden and rapid gain in weight, the presence of classic girdle and mons adiposity, increased sugar tolerance, polyuria and intestinal atony. There are a slow pulse, subnormal temperature and general apathy.

Physical signs indicating hypothyroidism and insufficiency of the suprarenal glands are often associated findings in the hypofunction of either lobe or the whole gland.

Hyperpituitarism involving either lobe is often associated with severe headaches. It is not such a common condition, and no cases were found in this series. The associated symptoms are singularly spectacular; those of the anterior lobe in the more extreme form may be gigantism or acromegaly, and those of the infundibular process (posterior lobe), diabetes insipidus, pituitary polyuria and glycosuria.

Cushing² has pointed out that many of the earlier cases of hypersecretions of either lobe may be followed by hypofunction, and that this is to be expected in those functional glandular conditions which have become arrested.

The visual fields in the cases studied seem to fit into the first of the eight stages described by Cushing and Walker⁹ for tumors of the brain. There was a superior temporal quadrant defect in the red field, and the form fields were within normal limits in eight of ten cases. Four relative central and four relative peripheral scotomas were present, and it is interesting to note that all but two of the scotomas were found in the cases with normal sellae.

De Schweinitz⁸ stated that, according to anatomic studies, in tumors of the hypophysis traction on the infundibulum or direct pressure from an enlarged pituitary on the chiasm does not account for all the ocular manifestations. No one has demonstrated that there is a passage of toxins from perihypophyseal spaces to the subdural space immediately over the hypophysis and from there to the chiasmatic cisterna. Traquair¹⁰ indicated an acuteness of pressure rather than its site as the cause of some of the changes, and he expressed the belief that central scotomas depend on the impaired vascular supply of the macular bundles. Fuchs¹¹ stated that the scotomas may be due to a toxic influence, either derived from a perverted secretion of the gland or distilled from an inflammatory edema surrounding the tumor.

Peter¹² presented the visual fields of a patient who in 1910 showed a bitemporal hemianopia for form and colors, and who recovered completely in twenty months under treatment with thyroid and pituitary extract. A year later there was a relapse, and altitudinal hemianopia appeared. With the same glandular therapy, recovery was complete in eight months, and the patient remained normal to the time of publication in 1923.

Finlay¹³ and Lancaster and Carvill,¹⁴ in different reports, stated that during the last four to six weeks of pregnancy the large majority of women showed bitemporal field contractions, which disappeared quite rapidly

9. Cushing, Harvey, and Walker, Clifford B.: Distortions of the Visual Field in Cases of Brain Tumor, *Brain* 37: 341, 1915.

10. Traquair, H. M.: Bitemporal Hemianopia: The Later Stages and the Special Features of the Scotoma, *Brit. J. Ophth.* 1: 216, 1917.

11. Fuchs, E.: Ocular Manifestations of Internal Secretion, *Arch. Ophth.* 51: 307, 1922.

12. Peter, L.: Principles and Practice of Perimetry, Philadelphia, Lea & Febiger, 1923, p. 200.

13. Finlay, C. E.: Bitemporal Contractions of Visual Fields in Pregnancy, *Internat. Cong. Ophth.* 1: 144, 1922.

14. Lancaster, W. B., and Carvill, Maude, in discussion on Finlay (foot-note 13).

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or to distention of its capsule by physiologic hypertrophy.

2. The majority of the visual fields show a contraction of the superior temporal quadrant for color and varying changes in the form fields.

CONCLUSIONS

1. Studies of the visual fields made in cases with a history of periodic headaches and ocular discomfort, in which there is no improvement with the correction of the refractive error, may aid in diagnosis.

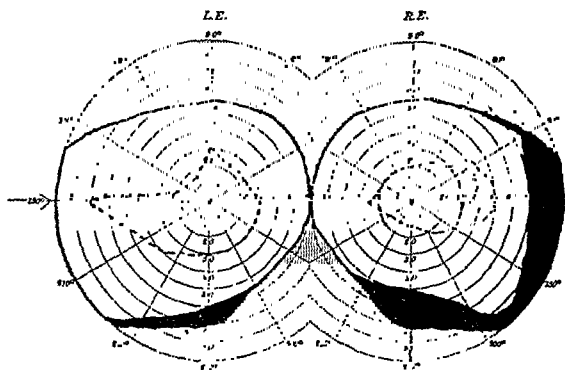


Fig. 1 (case 1).—Visual fields taken on Aug. 2, 1927. Vision in the left eye was 1.0; that in the right eye, 1.0 —2.

2. The aid of the internist and the roentgenologist should be sought in the study of the activity of the pituitary gland and the condition of the sella.

REPORT OF CASES

CASE 1.—Mrs. B. S., a physician, 37 years of age, was first seen in September, 1927, when she complained of generalized periodic headaches which had been present for from ten to fifteen years and had gradually increased in severity. The headaches were always more severe a day or so before menstruation. Four weeks previously the most intense headache that she had ever experienced, of six hours' duration, was

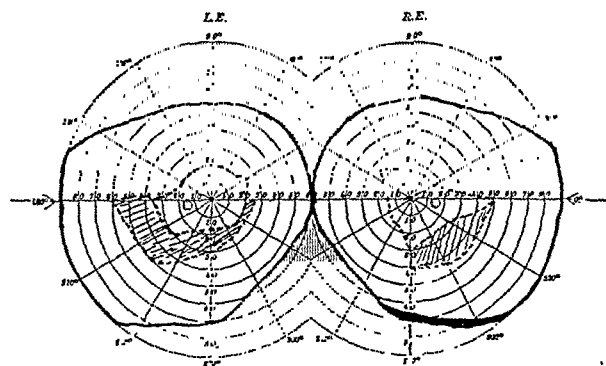


Fig. 2 (case 2).—Visual fields taken on Nov. 9, 1928. Vision in the left eye was 1.5 —3; that in the right eye, 1.5 —2.

followed by a right facial paralysis. The paralysis had gradually improved, but the early morning headaches persisted. Mental confusion was often present with the severe headaches.

General examination gave negative results. The pupils and fundi were normal, and there was no muscular imbalance.

The roentgen picture of the sella showed no distortion. There were a definite slanting off of the right and left superior temporal quadrant for color and a temporal defect in the right form field; a peripheral and central relative scotoma for red was found in each eye.

Unilateral roentgen treatment was given, but was followed by a severe headache which lasted for almost twelve hours. The patient did not return for treatment of the opposite side.

Her severe headaches did not return, and the fields taken one month later demonstrated that there were a widening of the color fields and loss of the relative central scotoma. The fields taken again in 1930 had expanded outlines for form and loss of all scotoma. The patient reported that she had continued to be greatly improved, only occasionally having pain, though mild, which sometimes lasted thirty minutes. Again in October, 1932, she stated that she had been entirely free from headache.

CASE 2.—Miss R. C., a librarian, aged 23, consulted me in November, 1928, because of a dull diffuse pain throughout the head, associated with a sharp pain through the eyes every time she tried to read. Polyuria had been present the past month. Premenstrual headaches and dysmenorrhea had always been present.

General examination showed the height to be 5 feet 4 inches, and the weight 110 pounds (49.9 Kg.). She had a small head and hands, with long tapering fingers.

Ocular examination showed that corrected vision in the right eye was $-75 = 1.5 - 2$; that in the left eye was $-50 = 1.5 - 3$. There was no muscular imbalance; the disks and fundi were normal. There were a slanting off in the superior temporal and inferior nasal quadrants for red, a peripheral relative scotoma for red in both eyes and a slight increase in the size of the blind spots.

The roentgenogram of the sella showed nothing abnormal.

Roentgen treatments were given, and the headaches improved immediately. This treatment was followed by glandular medication, given by Dr. MacDonald.

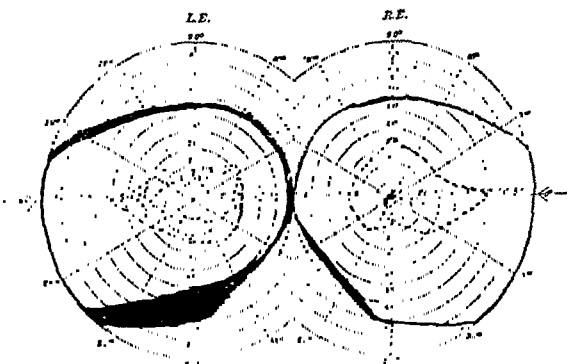


Fig. 3 (case 3).—Visual fields taken on Dec. 12, 1928. Vision in the left and the right eye was 1.5 —3.

In October, 1932, the patient reported that she had had no more headaches, that she was married in 1931, and that a normal child was born in August, 1932.

CASE 3.—Mrs. G. S., a telephone operator, aged 33, the mother of four normal children, was seen in December, 1928, complaining of premenstrual frontal headaches which had been present for the past fifteen years. They gradually became more frequent until they were almost constant. The pain increased in severity with the use of the eyes for any near work. She had always been strong and able to care for her four children, and she worked for the telephone company until the previous year, when she began to suffer from severe fatigue after simple work. A headache seemed to be precipitated by fatigue. She was extremely irritable. Hysterectomy had been performed seven years previously for fibroids.

General examination, made by Dr. MacDonald, gave negative results. The height was 5 feet 3 inches, the weight, 159 pounds (72.1 Kg.). The blood pressure was 120 systolic and 80 diastolic. The metabolism was zero.

The refractive error of $+75$ axis 90 in each eye was the same as the patient was wearing, and there was no muscular imbalance. The pupils and fundi were normal.

The visual fields showed a slanting off of the superior temporal quadrants for color, and there was no constriction of the form fields. There was a relative central scotoma for one-half degree green.

The roentgenogram of the sella showed nothing abnormal (8 by 13 mm.).

The patient reported improvement after the roentgen picture was made and with the administration of an anterior lobe pituitary preparation, given by the internist, for one year. She was free from headache during the treatment, and has remained so since then.

CASE 4.—Miss I. M., a medical student, 26 years of age, was first seen in October, 1930, when she complained of severe bitemporal headaches which had been present on awakening the previous three weeks, and were usually worse on the left side. They were similar to the severe headache which came on four or five days before menstruation, and which had been present since the onset of the menses. The headaches were different from periodic migraine, which had come on at irregular intervals since the age of 10. The present headaches were associated with somnolence and mental retardation. Polyuria occurred during and immediately following an attack. During the headaches the patient was unable to use her eyes for any continued near work.

General examination gave negative results. There was an increase in pigmentation of the skin around the angles of the jaws, and the skin was somewhat thickened and dry. There was an increase in the amount of hair about the temples and between the eyebrows. There was a moderate nerve deafness, probably of otosclerotic origin.

The compound myopic astigmatism had been properly corrected; the pupils and fundi were normal, and there was no muscular imbalance. There was a slight right superior

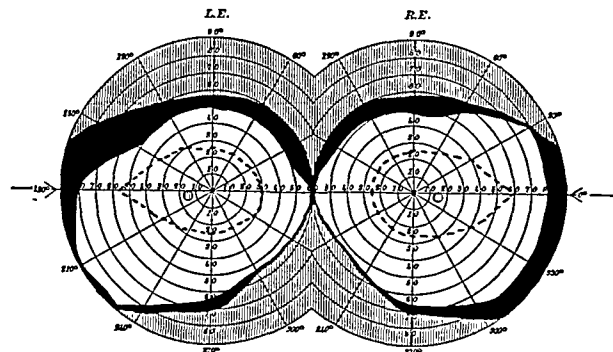


Fig. 4 (case 4).—Visual fields taken on Oct. 30, 1930. Vision in the left and the right eye was 1.5.

temporal contraction of the form fields, but the field for red was well within normal limits.

Roentgen examination of the sella showed rudimentary clinoids and dorsum, indicating enlargement.

Dr. Percival Bailey stated that there was no tumor, and that roentgen treatments were not contraindicated. The first roentgen treatment was given on October 27. Four days later the patient reported that the headache disappeared one hour after the treatment, and that she had felt much better and was more alert. The contraction of the form fields had disappeared, whereas the red fields remained the same. On Oct. 16, 1932, she reported that there had been no recurrence of severe headaches, although there was a mild diffuse pain usually present for from four to five days before the menses.

Roentgen examination made in October, 1932, showed no change in the sella.

CASE 5.—Mr. C. Y., an engineer, aged 39, was seen in January, 1929; he complained of frontal headaches, which radiated to the right temporal region. The headaches began four years previously, and at the time of examination were almost constant. Blurred vision and double vision were present at times, especially during the headache. He could usually anticipate the headache by his thirst. He passed large quantities of urine during and after the attack. Mental confusion was always present with the more severe headaches.

General examination revealed girdle and mons adiposity and small hands, with long tapering fingers; otherwise, the findings were negative.

Ocular examination showed that uncorrected vision in the right eye was 1.0; that in the left eye was 1.2. There was cover divergence, but the esophoric power was normal. The pupils and fundi were normal. The disks showed slight temporal pallor, but within normal limits. There were a general contraction of the right form field, more marked in the inferior quadrant, a slanting off of the superior temporal quadrant and a general contraction for color.

A roentgenogram showed that the sella was normal.

Whole pituitary extract was given, and the headaches were greatly lessened in severity and frequency. Seven months later the visual fields were normal for form, and the left color field was normal, the right field remaining slightly contracted.

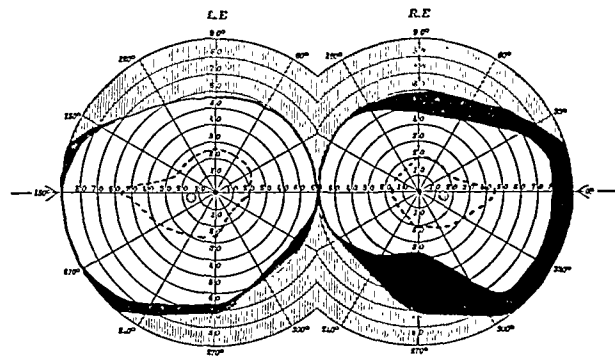


Fig. 5 (case 5).—Visual fields taken on Jan. 1, 1929. Vision in the left eye was 1.2; that in the right eye, 1.0.

In January, 1933, the patient's wife reported that he remained almost entirely free from headaches.

CASE 6.—Mrs. F. K., a housewife, aged 38, was seen in May, 1927, complaining of attacks of occipital headaches from two to three times a week for the past nine months; they increased in severity with the use of the eyes for near work. The pain in the head had become so severe that she could not sleep. She had all the upper teeth extracted in January as the only source of questionable infection; there had been no change in the headaches.

Dr. Hardon reported that the general examination gave negative findings.

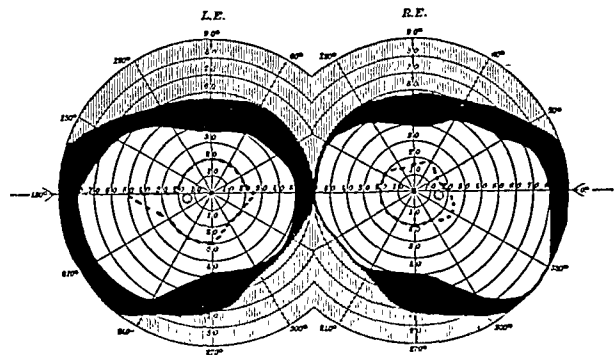


Fig. 6 (case 6).—Visual fields taken on May 26, 1927. Vision in the left and the right eye was 1.2X.

A roentgenogram of the sella showed nothing abnormal.

Ocular examination showed: vision in the right eye, +75 = 1.2; that in the left eye, +75 axis 30 = 1.2. There was suggestive pallor of the temporal half of the left disk. The vessels were of normal size. The pupils and fundi were normal. There was contraction of the red fields with a slanting off of the superior temporal quadrant and a moderate general concentric contraction for form.

Glandular and roentgen treatments were given, and the patient reported in February, 1933, that the headaches had not returned.

CASE 7.—Mrs. A. S., a housewife, aged 41, the mother of eight normal living children, consulted me in November, 1925,

complaining of severe frontal headaches, which became deep and boring, and were present on awakening in the morning. They had been present for the past eighteen years, with slight improvement at times. Fatigue always precipitated a headache. There had been no definite relation to periods of improvement noted in reference to the pregnancies. The vision was blurred, and nausea and vomiting occurred with the most severe headaches.

General examination showed that the weight was 150 pounds (68 Kg.); the height was 5 feet 2 inches. The blood pressure

was regular. Dysmenorrhea had been present before the birth of a normal child six years previously, but there had been none since that time. No nausea or vomiting had ever been present.

General examination was made by Dr. MacDonald. The height was 5 feet, 3 inches; the weight, 106 pounds (48.1 Kg.). The blood pressure was 130 systolic and 80 diastolic. The white count was 10,000, with 7 per cent eosinophilia. Some myocardial changes were present on the basis of an old rheumatic heart. There was an infantile uterus.

Ocular examination of corrected vision showed:

Right eye: $+1.00$ w $+1.50$ ax $100 = 1.2$.
Left eye: $+0.75$ w $+1.50$ ax $90 = 1.2 -2$.

The fundi and disks were normal. There was no muscular imbalance. There were a slight contraction for form above and below and a slanting off of the superior temporal quadrants for red.

After the regulation of the treatments with an anterior lobe pituitary preparation, the patient gained 20 pounds (9 Kg.), and had no headaches. The eyes were comfortable for any amount of near work so long as she took the preparation twice a week.

CASE 9.—Miss F. B., an office worker, aged 29, was seen in October, 1927, at the Post-Graduate Hospital Clinic, complaining of severe diffuse headaches, which began at the age of 5 years. The pain had gradually become more severe in the previous four months, and she had not been able to work for a month. For many years the headaches were worse before and

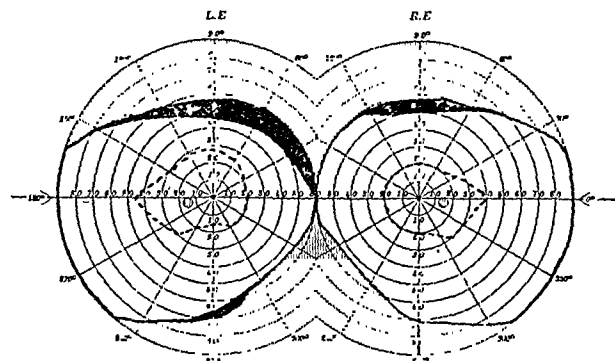


Fig. 7 (case 7).—Visual fields taken on Feb. 4, 1929. Vision in the left and the right eye was 1.0.

was 136 systolic and 74 diastolic. The pulse rate was 76. There was a girdle adiposity; the hands and head were small. The Wassermann color process and Kahn test were negative.

Ocular examination showed:

Right eye: $+75$ w 25 ax 180 1.0^A B.D. $= 1.0$.
Left eye: $+75$ w 25 ax 180 0.5^A B.U. $= 1.0$.

The disks showed marked venous pulsation. In the periphery of the fundi there were fine diffuse pigmentary changes. There was slight general contraction of the color fields.

A roentgenogram revealed a contracted sella and proliferative osteitis of the frontal, parietal and temporal bones.

Glandular treatments were taken irregularly, with only a slight change in the frequency of the headaches.

In April, 1932, ocular examination was repeated, and a change was made for presbyopia only. The headaches were slightly less severe, but occurred every week.

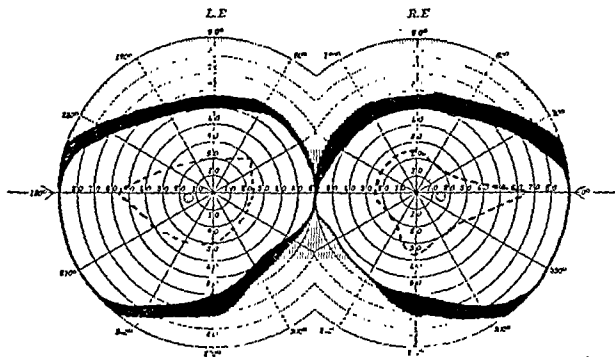


Fig. 8 (case 8).—Visual fields taken on June 14, 1929. Vision in the left eye was $1.2 -2$; that in the right eye, 1.2 .

CASE 8.—Mrs. H. A. B., a housewife, aged 40, was seen in June, 1929, complaining of suboccipital and frontal headaches, which were usually present when she awakened in the morning. She had been unable to use the eyes for near work for any length of time during the past twenty years, as a headache or ocular discomfort would be induced. The headaches began at the age of 5 years; the longest intermission had been one month, and the most prolonged attack lasted for four days. The headaches were always increased preceding and during menstruation. The menses began at the age of 15 and had always

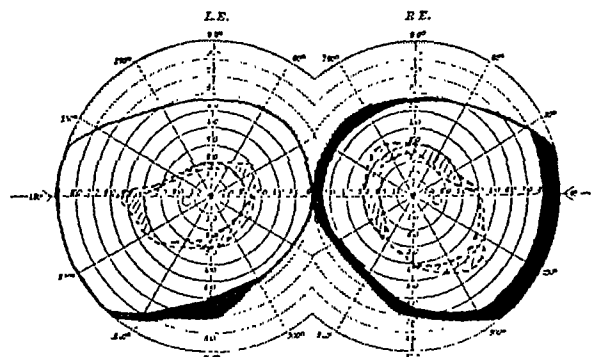


Fig. 9 (case 9).—Visual fields taken on Dec. 8, 1927. Vision in the left eye was 1.2 ; that in the right eye, 1.5 .

after menstruation, and she felt much better during the menses. Nausea and vomiting had been present with the most severe headaches. Blurred vision and double vision frequently were present during the pain, and she was unable to use the eyes for near work.

The patient had been treated for syphilis, but negative blood and spinal fluid tests had been obtained in the clinic within the month.

The weight was 92 pounds (41.7 Kg.); the height, 5 feet, 2 inches.

General and neurologic examination, reported by Dr. Ort-mayer, gave negative findings except for a right floating kidney and obstinate constipation.

Ocular examination showed:

Right eye: $+1.25$ w $+50$ ax $90 = 1.5$.
Left eye: $+1.25$ w $+50$ ax $90 = 1.2$.

There was dilatation of the fine capillaries of the disks. The fundi and disks were normal; there was no muscular imbalance. There were a slanting off in the superior temporal quadrants for red, peripheral relative scotomas for red in both fields and a slight temporal contraction for form in the right eye.

Contraction of the sella was shown by a roentgenogram.

The acute pain was relieved by the use of roentgen therapy, and this was followed by the use of the glandular extract. The last notation of January, 1928, was that the patient was feeling much better.

CASE 10.—Miss K. B., a school girl, aged 18, consulted me in October, 1928, because of diffuse pain in the head following

an injury one month previously during which she had hit the top of the car while riding. Severe dysmenorrhea had always been present. Allergic reaction to ragweed had been noted since 10 years of age. Pollen extracts had been given, and the condition was relieved. A deviated septum had been found on nasal examination, and a submucous resection relieved the headaches until January, 1929, when the same type of headache returned, coming on with any excitement and usually present on awakening. The pain was bitemporal and worse on the

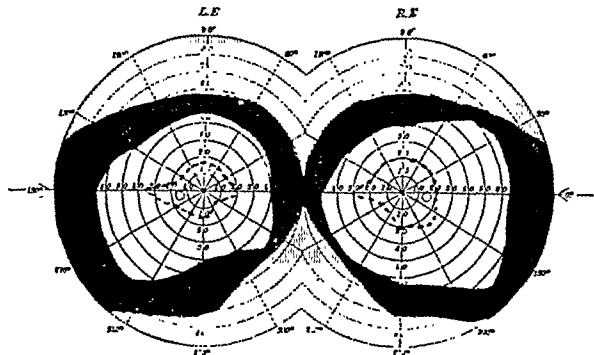


Fig. 10. (case 10).—Visual fields taken on Jan. 5, 1929. Vision in the left and the right eye was 1.2.

right side. The use of glasses did not change the character of the headaches.

General examination showed the weight to be 136 pounds (61.7 Kg.); the height was 5 feet, 4 inches. The patient had a small head and hands, with tapering fingers, and there was increased girdle adiposity.

No roentgenogram of the sella was made. The visual fields showed slight general contraction for form and red.

Ocular examination of corrected vision showed:

Right eye: + 50 w + 50 ax 105 = 1.2.
Left eye: + 50 w + 50 ax 90 = 1.2.

Glandular therapy was given, and the last report in April, 1931, was that the headaches and ocular discomfort were relieved so long as the medication was continued.

ABSTRACT OF DISCUSSION

DR. CLIFFORD B. WALKER, Los Angeles: I will mention a few points which Dr. Cushman did not have time to bring out, referring particularly to the monograph of Dr. de Schweinitz, presented as the Bowman lecture of 1923, in which it is shown that the chiasm is not always in contact with some part of the sellar diaphragm. Indeed, in many cases the gland would have to double in size before touching the chiasm and even then the chiasm had some chance to move away because it is suspended or stretched in subarachnoid mesh and fluid. Horizontal variations as cited by Dr. Cushman further add to this vertical variation. It has no dural covering, however, as does the hypophysis, and without this protection is more quickly affected by pressure. Nevertheless, it seems clear that, of a given number of individuals having a swelling of the hypophysis sufficient to produce pain from its dural capsule and diaphragm, only a certain number, perhaps no more than 50 per cent, may be expected to have an upper temporal field defect from pressure. On the other hand, I know from examination of many hypophyseal struma or tumor patients that of those having sufficient swelling to give marked field defect the percentage having headache is not greater than 50. Evidently, much depends on the sensorium of the individual and particularly of the dura of the diaphragm and neighborhood. Apparently it is necessary to fall back on the possibilities of circulatory disturbance and secondary toxic manifestations to explain cases with no chiasmal pressure, yet with field defects. In searching for field defects in an individual having headache of the pituitary type, I wish to emphasize the value of quantitative perimetry, as illustrated by the recent careful study of a physician's daughter, aged 18 years. Consultants had studied her physical

condition intensively for the cause of persistent headache during the past year. From an endocrinologic standpoint a hormone deficiency was suspected and thyroid extract had been used without improvement. Roentgen examination showed a sella perhaps a little smaller than usual yet not far from normal. Some erosion of the posterior clinoids was suspected by a few observers and field examination was carried out April 20, 1933, with the result that a definite depression for small visual angles and to some extent also the colors was apparent in the upper quadrants. The defect was predominantly bitemporal, but with a slight tendency to cross the midline and suggest homonymous possibilities. These features, however, are not at all impressive in the field taken on the perimeter with the normal or 5 mm. disk both for form and for color, but when the Bjerrum screen is used, the 1/1,000 and 1/2,000 form field show the definite patterns described, and these measurements can be checked repeatedly. Colors cannot be so satisfactorily used in reduced sizes but in half normal sizes on the perimeter offer an important confirmation or check on the screen record. Since x-rays had been used considerably for films, pituitary extract for hypopituitary secretion was given. The headaches stopped promptly. Gradually her diet was changed in the direction of reducing carbohydrates and July 22 her father reported no return of the old headaches. I hope that Dr. Cushman's work will draw more attention to this group of pituitary headaches and thereby bring relief to many sufferers.

ACUTE UNCINARIASIS FROM MASSIVE INFESTATION AND ITS IMPLICATIONS

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In the year 1904 the Puerto Rico Anemia Commission wrote its report on what was the first organized campaign in the world against uncinariasis as a scourge of the agricultural laborer. This work embraced a very complete study of the clinical picture produced by the disease and insisted on what has not been emphasized in any other work on the subject; namely, the occasional occurrence of acute uncinariasis produced by sudden massive infestation. In a summary of the labors of the Puerto Rico Anemia Commission¹ is found a brief description of one of these acute cases in a Negro, a race supposed to be relatively immune. After working sixteen days at burying the feces of heavily infested patients in our field hospital in Utuado, he reported for treatment with extreme asthenia, severe gastralgia, and an unusually marked case of uncinarial dermatitis of the feet. The gastralgia had supervened on the eighth day from first exposure to infestation, and his hemoglobin registered 15 per cent. A feature of this case was intestinal hemorrhage, and only after intense and careful treatment was his life saved.

Since that time hookworm disease has become, at least in the popular fancy, a public health problem relegated to the specific attention of sanitarians; and what was, at the time we were working, a disabling and very often fatal disease has become apparently merely a routine matter for health officers to settle.

1. Ashford, B. K.; King, W. W., and Gutierrez, Pedro: Report of the Commission for the Study and Treatment of "Anemia" in Porto Rico, San Juan, Porto Rico, Bureau of Printing and Supplies, 1904, p. 112.

It is for the purpose of rearousing the medical profession to a just conception of one of the great tropical diseases, as well as to corroborate a phase of uncinariasis on which few if any comments have ever been made and further suggest that there is probably still another and more sinister aspect of what has seemed such a simple illustration of parasitic invasion, that we have decided to break a silence of twenty-five years on a subject that seems for some time to have been considered closed and completely investigated.

On August 3, 1932, Dr. Ashford was called in consultation to Caguas, a town 20 miles from San Juan, to see a patient said to be dying from intestinal hemorrhage complicating typhoid fever. The patient, a white school girl from one of the cultured families of this island, had been all her life under the professional supervision of Dr. Ashford and, in fact, had been seen by him only a short time before the excursion to be recounted and found to be in perfect and robust health. Her blood had then been examined and found normal. On the outstanding factors in the history of the case, namely, the drinking of unsterilized water outside of her home, and the development in two or three weeks of a low fever terminating in a serious intestinal hemorrhage, her physicians had rather naturally diagnosed her case as typhoid fever, in spite, however, of the absence of a positive agglutination test, which they considered delayed. But a careful and time-consuming analysis of the history, after cross-questioning the family at the consultation referred to, revealed the following facts and provoked quite another diagnosis:

It seems that the patient had gone to the home of relatives at Luquillo to join her cousins and enjoy sea baths in a little bay nearby. She arrived on the 23d of June and immediately went to the beach. The bathing party on that day consisted of five persons—herself, two cousins, 14 and 15 years of age, an aunt, and a servant. They bathed all the morning and after returning to lunch it was decided, in spite of a heavy tropical rain which was meanwhile falling to bathe again in the afternoon. But as they passed this time along the shore to the bathing place, they observed that a little stagnant stream, which in the morning was not discharging into the bay, on this afternoon was pouring into it. The torrential rain had caused it to overflow the narrow barrier of sand which had heretofore separated it from the sea.

After remaining the whole afternoon in the water, all save one of the bathers noted on emerging a severe itching. On examining themselves they discovered that, while no evidence of irritation of the skin could be found on the exposed parts, the entire trunk covered by the bathing suit was peppered by what appeared to be little bites. They spent the entire night wakeful and scratching. This itching kept up for about a week, at the end of which time they began to feel as if they had caught cold. It was as if they had a heavy obstruction of mucus in the throat which could not be dislodged, and it caused not only discomfort but varying degrees of pain on swallowing and in speaking. A physician was called, but nothing beyond a superficial irritation was noted. Within a week more, an unaccountable weariness supervened with fine fleeting pains in the epigastrium. These pains became colicky, and eventually diarrhea set in in all save one case. The stools were fermented, dark and fetid, and in two cases were loaded with blood. Of the three others, two mentioned having some blood in the stools. One stated that "there

was at times a considerable amount of blood," the second that the stools were "tarry with occasional red blood." The third (patient 6), however, stated that no blood was ever seen in the stools. That there was blood in every case was later verified by microscopic or chemical examination.

On the next day, the 24th, while it was still raining, they were joined in their sea bath by patient 3, the mother of patients 2, 4 and 7, whose symptoms including itching on her emergence from the bath were identical to those of the others. She reported having noted "mahogany-colored stools" at the same time as the others found blood in their feces and, as in their cases, this color was found to be due to blood.

The seventh patient was also one of this family, a 12-year-old cousin of the first patient. She, in common with all the rest, save the first patient, had taken sea baths every day at this site from the first of June on; but it should be carefully noted that not until the 23d did the little polluted stream begin to flow into the bay in which they bathed, and that not until after this had occurred was there any itching after the bath.

The seventh patient, however, did not bathe in the sea on the 23d of June but on the 25th. While it was still raining, and the water laden with polluted earth from the banks of the stream was discharging into the sea, she resumed her baths, which she had stopped on the 19th, and continued them until the 30th. Her story is that she never felt any itching after her bath but that on the 19th of the month it rained a little, and child-like she began digging with her hands a small channel through the barrier of sand to let the water out of the stream into the bay. Although there was no itching, she shared the fate of her companions, as will appear later.

At the time of the consultation in Caguas, every one of these bathers, except two, was actually sick in bed. One of them had been already sent to a hospital in San Juan.

In view of this history, as extracted in consultation, Dr. Ashford made the diagnosis, in spite of negative fecal examinations for ova of parasites, of acute uncinariasis from massive infestation. Seeing that these cases were of extreme scientific interest, the physicians in charge of the case were requested to cooperate in getting all this group of bathers into the University Hospital of the School of Tropical Medicine. An immediate transfusion of blood was recommended for the first patient in order to get her there alive, as she was almost moribund from hemorrhage.

Once collected in the University Hospital, this group automatically divided itself into two: those in whom enough larvae had completed their cycle and reached the intestine to set up, through their bites and blood-sucking, a severe hemorrhage, and those (the remainder of the group) in whom most of the larvae had failed to complete the cycle and were still wandering in the body tissues.

In the following details it will be seen that all of the first six patients, with a few exceptions to be noted, had been (1) infested on the same day in the same place, (2) remained in the water the same length of time, (3) presumably received about the same dose of larvae, and (4) subsequently suffered from about the same symptoms developing about the same time.

With the exception of one (patient 2), all had intense itching as soon as they emerged from the afternoon bath on the 23d of June. This excepted patient devel-

oped it on the next day, as did patient 3, who, as previously stated, did not go into the infested water until the 24th. With the exception of patient 6, all were in the water the same length of time. This patient was exposed from one to one and a half hours instead of the whole afternoon. These two patients probably received a lighter infestation than the others, and their history shows it, patient 3, because she bathed on a day in which there were less larvae in the water than when the rain first came up, and patient 6 because she was in the water only about one third of the time that the others were.

A curious feature of this uncinarial dermatitis was that the bites seemed to occur practically only on the parts covered by the bathing suit. This undoubtedly was due to the fact that the infected larvae, caught between bathing suit and skin, were thus offered protection and a support to hold their position until they could penetrate. On the exposed parts they must have been usually washed away by the movement of the water before they could effect an entrance.

Only patients 6 and 7 failed to see blood in the stools, and this seems due to a small intestinal worm burden. In the rest, the blood seen in the stools was dark and had evidently come from high up in the intestine. As stated, the hemorrhage in case 1 was so severe as nearly to cost the patient her life; in case 2, while less in amount, it was nevertheless alarming. All of these patients were prostrated save patient 6, and all lost heavily in weight and became definitely pale.

Patient 7 was probably infested a little earlier than the others (June 19) by digging in the sand and paddling in the water of the sluggish stream as heretofore described; but she did not suffer from any dermatitis from which the date of infestation could be fixed. That she received a heavy infestation is clear from her hematologic record. She did have, however, the throat symptoms of the others for one day, and in three weeks she had pain in the epigastrium and profuse diarrhea, although without blood, as well as loss of weight, color and strength. This patient subsequently was found to harbor only seven ancylostomes in the intestine, but her marked leukocytosis and extravagantly high eosinophilia testify to a heavy burden of larvae in the body tissues. This case can be considered one of an almost pure larval phase of uncinariasis. It seems much more logical to conceive that the intestinal irritation resulted from some excretion into the bowel through the intestinal mucosa of toxic products of these larvae than that these seven small denizens of the intestine should have been responsible.

One of the most striking features of this group infestation was that the organism was almost exclusively one that can be considered really infrequent, if not rare, in Puerto Rico, *Ancylostoma duodenale*. Any necators that might present themselves on using the anthelmintics would probably have had to come from some previous infestation by the universally prevalent *Necator americanus* of this island. Only two of the seven presented them, and then only one or two worms of this species, probably because of some chance insignificant infestation in early childhood, which never affected the health. Whether some of the patients in whom the majority of the larvae did not succeed in reaching the intestine had had a relative tissue resistance to hookworm, developed by previous infestation, which might explain the noncompletion of the cycle must remain a matter of conjecture.

As a matter of fact, they were all apparently perfectly well before that bath on the 23d of June.

It should also be emphasized that all save patient 1, who incidentally, had by far the worst infestation, had been bathing daily in this very spot since the first of June. But only when the infested stream flowed into the bay was infestation possible, and naturally, therefore, no uncinarial dermatitis had previously developed.

All seven of these cases presented a well defined secondary anemia, with a tendency in two toward failure of the gastric element for the specific hormone needed for stimulation of the hematopoietic function. The characteristic of this anemia in the first two cases, forming group 1, was a precipitous descent to dangerously low values with a prompt rise on expulsion of the majority of the ancylostomes to a 60 to 75 per cent level. At this point, however, they stuck, having been converted into cases of group 2, the group whose symptoms were sustained by wandering larvae, and which we have elected to call the larval phase of uncinariasis, to which we can now add those of group 1, whose intestinal ancylostomes have been in the main expelled. No amount of good food, iron and liver extract would improve their blood values, which have remained at from 65 to 75 per cent for hemoglobin, and from 75 to 85 per cent for erythrocytes, with the natural slight oscillations.

These cases are unique in that the patients concerned have been most closely watched for a whole year beginning shortly after their infestation. All of them came under our vigilance in August, 1932, and thenceforth full blood counts, hemoglobin estimations by the calibrated Sahli apparatus, differential counts, and Price-Jones curves were made daily up to the middle of September. From that time to November, they were made every second or third day, and thenceforth every week or two.

The secret of what happened to these patients is found in a study of the leukocytes. First, infestation, when sufficiently massive, produces leukocytosis, and this leukocytosis is eosinophilic. In every one of these cases this occurred and on these abnormalities, with a history of ground-itch, sudden loss of strength and color, and, generally, diarrhea, the correct diagnosis should be strongly suspected, if not actually made clinically, as in this instance it was made. In these cases, in from one to two months after infestation, a high leukocytosis was found already developed. It oscillated for two or three months and then, throughout nine months, gradually sank to near or quite normal.

But if the leukocyte count is striking, the eosinophil percentage is still more so. When the patients were first examined, this percentage was found to lie all the way between 14 and 69. When most of the worms in the intestine had been expelled, the percentage rose; but this was not on account of the expulsion of the worms. There is, we believe, a more reasonable explanation: There is a growing feeling that eosinophilia is a phenomenon related to the disintegration and absorption of foreign protein. The old idea that eosinophilia in uncinariasis is due to a toxin produced by the worm can no longer be accepted in its literal sense. The eosinophilia rises when the larval mortality in the tissues rises. From now on, we must see that many more larvae, as a rule, fail to complete their cycle in the body than we used to realize. Had all the larvae that entered the skin of the barefooted *jibaro* during the campaign

of the Puerto Rico Anemia Commission finally lodged in the intestine, we would have had an expulsion in every case of many thousands on using thymol. During the long wet coffee season, hardly a day passed but that swarms of these larvae would penetrate the bare feet.

The present cases would seem to throw a completely new light on the disease which we thought we knew so well, a light which has already flooded the clinical field of ascariasis. The convulsions of young children

TABLE 1.—Blood Examinations

Case	Date	Hemoglobin, per Cent	Red Cells	White Cells	Eosinophils, per Cent
1	8/ 3/32	17	1,236,000	36,200	14
	10/ 3/32	78	3,264,000	17,800	78
	6/25/33	75	4,260,000	13,400	10
2	8/23/32	42	2,240,000	20,400	55
	9/ 9/32	52	3,416,000	41,200	87
	6/21/33	77	4,700,000	12,950	33
3	8/17/32	65	3,808,000	21,600	36
	9/28/32	66	3,744,000	10,800	74
	6/28/33	74	4,040,000	9,100	16
4	8/22/32	70	4,536,000	78,400	68
	10/12/32	68	4,102,000	28,800	88
	6/21/33	80	5,100,000	9,600	30
5	8/24/32	60	4,552,000	27,000	51
	9/ 8/32	55	3,936,000	25,000	72
	6/21/33	75	3,850,000	9,600	11
6	8/31/32	64	4,256,000	17,400	33
	11/25/32	60	3,720,000	7,750	62
	6/21/33	76	4,300,000	7,450	6
7	9/ 2/32	75	5,400,000	37,200	69
	9/19/32	60	3,824,000	20,000	91
	6/21/33	76	4,350,000	10,550	20

with roundworms are not so likely due, according to the old French notion, to reflex "irritation of the motor centers" as to the direct irritation of larvae wandering in the finer membranes of the brain, as already demonstrated by Professor Koppisch of the School of Tropical Medicine of Puerto Rico and by others. This is an obscure corner of the uncinariasis problem which has for many years needed illumination.

There is reason, therefore, to believe that undeveloped larvae have been arrested in their course to the intestine or have hopelessly wandered out of the paths that lead to it. For a time it looked as though they should eventually find their way to their destination, but a careful contemplation of these cases will convince almost any one that, once such an arrest or such a deviation from the normal path occurs, the larva remains a wanderer in the tissues until it dies. Now, it is very evident that the majority die within a comparatively short time after invasion, as the blood records indicate, for at first one sees the highest leukocytosis and eosinophilia. But there is a time in the course of the disease marked by a sudden rise in the percentage of eosinophils that indicates that even the larva of *Ancylostoma duodenale* in the body of its host has a measured term of life, just as apparently do the infective larve awaiting the contact of man outside the human body, and the length of this period seems not to be very different for either; for in a general and very broad way there seems to be a definite increase in eosinophilia toward the end of the third month from the time of the original invasion of the skin. Scrutiny of the tables will, we think, bear out this suspicion. Not that there are not enough larvae left surviving to sustain an eosinophilia at a later period through their death, or, perhaps, by their activities in life, for we are not at all sure that the larvae have to die in order to produce eosinophilia and leukocytosis, but at this

period may be expected the highest mortality of the undeveloped organism.

This is what we would like to refer to from now on as "the larval phase of uncinariasis." It is accompanied by loss of strength and weight, sallowness, irregular fever, and a definitely high eosinophilia and leukocytosis. As already seen, it may be quite legitimate to add diarrhea. This anemia is refractory to treatment, possibly on account of constant depression through a toxin on the synthesis of hemoglobin, and thus is the door reopened to a discussion of a hypothetic poison elaborated by the worm. Once one of us, a member of the Puerto Rico Anemia Commission, enunciated the theory that this was a hemolysin. Today he would be more inclined to suspect some such influence as that indicated here.

As stated in the writings of the Puerto Rico Anemia Commission, slight rises in temperature were often seen at the outset of uncinariasis. This is amply borne out in this series of seven cases. In the five cases of which we have record, four show distinct elevations of temperature at a time when we have every reason to suppose that the burden of the larvae in the tissues was greatest, and the other patient stated that she had fever before being seen by us, a statement also made by patient 7. Thus, only one was afebrile, and that a rather lightly infested patient. The fever is intermittent when it occurs, and there are episodes of abrupt high temperature, at times preceded by a chill. In chronic multiple infestations, fever is, of course, liable to be absent. Table 1 gives the salient points in the examination of the blood on three occasions, and in the course of each of these seven cases, one when the patient was first seen, one on the date of the highest eosinophil percentage, and one when the patient was last seen. No mention is made of leukocytes other than eosinophils, for they are proportionately reduced as the eosinophil percentage rises. The Price-Jones curve shows rare deviations in what is almost always a normal curve or one tending toward microcytosis.

The parasitologic aspect of these cases is extremely curious. In cases 1 and 2, 1,439 and 614 ancylostomes, respectively, were eliminated; in cases 3 to 7, inclusive,

TABLE 2.—Treatment and Results

Case	Number of Administrations of		Worms Spontane- ously Eliminated	Total Worms Eliminated	Gain in Weight Under Treatment
	Caprokol	Carbon Tetrachloride			
1	4	4	64	1,439	27.75
2	2	5	32	614	42.5
3	3	3	1	64	6
4	3	3	9	125	36.5
5	1	2	8	59	23.25
6	1	2	0	21	4.75 (loss)
7	1	2	0	7	5

64, 125, 59, 21 and 7, respectively, were expelled. In case 1 no ova were found until August 10, when 200 per gram of feces appeared on the forty-ninth day after invasion of the skin; by the 17th there were 26,500 ova per gram of feces. In all the rest, ova had naturally begun to appear in the feces. Two very striking phenomena were noted in the tedious and disgusting task of counting the worms. First, they were very small, owing to their adolescence, some indeed being very tiny, even to 1.8 mm. in length. Second, there was often a striking predominance of males, against the rule for old cases. In addition to this, the worms were very often

filled with blood. Still another neglected phase of the parasitologic problem was the spontaneous elimination of worms, which took place with striking regularity when the patient was not under the influence of an anthelmintic, and sometimes worms were found in copula, just as Leichtenstern² had first discovered. Table 2 gives the number of times the anthelmintic was administered, the kind of anthelmintic, the number of worms spontaneously eliminated, the total number eliminated, and the gain in weight of the patient to the date when last seen.

TREATMENT

The treatment has been, first, restorative, to enable the anthelmintic to be given; second, specific, which has been largely detailed; third, restorative again, to counteract the evil effect of infestation.

Under the first heading, which is exclusively for case 1, there had to be three transfusions of blood before we dared to give the anthelmintic; and when the anthelmintic was given, we were compelled to use so slow-acting and mild a laxative as the extract of cascara sagrada. In addition, in order to improve the blood values, which were dangerously low, both liver extract by 4 cc. injections daily, and 8 cc. of a 50 per cent aqueous solution of ammonium and iron citrate by mouth administered in orange juice, were given.

Under the second heading, it only remains for us to comment on the effects of caprokol (hexylresorcinol), a somewhat new and infrequent anthelmintic in uncinariasis. We consider a full dose 2 Gm., or ten capsules of 0.2 Gm., but in case 1 we did not exceed 1.4 Gm. In several of our cases on various occasions it seemed to produce nausea and even vomiting, but it appeared to cause no other deleterious effect and was certainly efficient.

Mention should be made in case 4 of the systematic use of 0.2 Gm. of medicinal gentian violet in enteric coated pills with the object of killing the larvae in the tissues. This boy had a severe bronchitis in the course of his disease, which was conceived of as possibly due to a concentration of larvae in the lungs, and for three weeks he took this dye by mouth, as so highly recommended by de Langen³ and Faust⁴ as a larval vermicide in strongyloidiasis. But the experiment absolutely failed, and the conclusion was drawn that gentian violet, at least by mouth, is a failure in the treatment of the larval phase of uncinariasis. This experiment, however, is not complete until gentian violet is used in 0.5 per cent intravenous injection.

Under the last heading, practically all we depended on was iron, either nine pills of ferrous carbonate a day, or 8 Gm. of saccharated ferrous carbonate in orange juice, as well as the basic thing to which much attention was paid, a high nitrogen diet, free from fermentable and greasy food.

RESULTS OF TREATMENT

Five of these patients consider themselves well and cured, and two say they are well, but their appearance

and weight belie their statement. As a matter of fact, we do not consider any of these patients cured. All are pale, and though the majority have gained satisfactorily in weight and their freedom from symptoms indicates a decided betterment, they still have a secondary anemia and an indication of a significant larval burden in the body tissues.

Attention is invited to the fact that full details, charts, tables, and graphics, as well as case histories of this series will be published in the December, 1933, number of the *Journal of Public Health and Tropical Medicine*, edited by the School of Tropical Medicine of Puerto Rico.

CONGENITAL MEDIAN BARS OCCUR- RING IN TWINS

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The term median bar in prostatic obstruction should be applied to any obstruction involving the posterior vesical lip, unassociated elsewhere with obstruction in the prostate, bladder or posterior urethra. It was originally described in 1830 by G. J. Guthrie, who then called it a dam or bar of the prostate. Later on, Alexander Randall, after an exhaustive pathologic study of prostates, found the term "bar" to be pathologically and anatomically correct.

Median bars can be acquired or congenital in origin and they usually occur at an earlier age than do hypertrophies. But one must not be misled by this early appearance, for in a recent review of 355 cases Young found 208 median bars in men over 50 years of age.

The etiology of most bars is primarily infection of the prostate and seminal vesicles, which results in a fibrosis and contracture at the prostatic neck. This evidence would seem to indicate that the man whose prostate has been the seat of frequent infection, whether venereal or nonvenereal in origin, is a likely candidate for prostatic bar any time after the fifth decade.

There are four types of bars pathologically: (1) a sclerotic dam across the prostatic neck which forms an acute angle with the lateral walls, (2) a fibrous bar which pulls the interureteral ridge close against the vesical orifice, (3) a glandular bar and (4) Albarran's subcervical glandular hypertrophy.

The symptoms caused by median bar are quite similar to those in prostatic hypertrophy. The patients complain of nocturia and frequency, which gets progressively worse. They also complain of urgency, dysuria, hesitancy in starting, dribbling, and a decided diminution in the size of the stream. The onset is slower than in hypertrophy and it is not uncommon to hear a patient relate of his first difficulties fifteen years previous to the time he seeks advice. The condition grows worse and often an acute retention occurs.

The diagnosis is comparatively simple for one of urologic training and is based on: 1. Definite obstruction at the prostatic neck when any instrument is passed into the bladder. With the finger in the rectum, one often experiences a "jump" which the instrument takes as it enters the bladder. This is caused by the instru-

2. Leichtenstern, O.: Einiges über Ankylostoma duodenale, Deutsche med. Wchnschr. 13: 565-568, 594-596, 620-623, 645-647, 669-672, 691-694, 712-715, 1887.

3. De Langen, C. D.: Anguillulosis and Eosinophilia (addendum), Mededeel. v. d. dienst. d. volksgezondh. in Nederl.-Indië 18: 310-314, 1929; Anguillulosis and the Syndrome of the "idiopathic hypereosinophilia," ibid. 17 (part 4) pp. 515-529, 1928; Anguillulosis en het ziektebeeld van de "Idiopathische Hypereosinophilie" (Strongyloidosis and "Idiopathic Hypereosinophilia.") Geneesk. tijdschr. v. Nederl.-Indië 68: 973-990, 1928; English abstr. in Trop. Dis. Bull. 26, 1929, p. 543.

4. Faust, E. C.: Gentian Violet Therapy for Strongyloides Infection, editorial, Internat. M. Digest 17: 57, 1930; The Symptomatology, Diagnosis and Treatment of Strongyloides Infection, J. A. M. A. 98: 2276-2277 (June 25) 1932.

Read before the St. Louis Medical Society, May 9, 1933. The operations were performed during the meeting of the American College of Surgeons in October, 1932.

ment first blocking and later passing over the obstructing bar. 2. Residual urine, varying in amount from a few to several hundred cubic centimeters. 3. Trabeculations of the bladder wall. Caution should be exercised here and a distinction made from the neurogenic bladder, in which the picture is somewhat similar. 4. Slight lateral clefts with a "drop off or gutter" between the elevated posterior lip and the interureteral ridge.

The treatment is transurethral resection or revision. Through an instrument such as McCarthy has designed it is comparatively easy for the urologist to remove under vision sufficient tissue to assure adequate drainage with a relief of symptoms. With the recent progress in electrical appliances in this field, and with the number of machines which render the spark gap and radio tube currents, it is very rare for one who is experienced in operative resection to have operative or postoperative hemorrhages of any consequence.

I wish to emphasize here that while prostatic resection is a highly spectacular and a superficially alluring procedure, it is honeycombed with pitfalls. The resectoscope in the hands of a general surgeon is an extremely hazardous instrument, and its usage should be limited to the expert. Alcock states that one can hardly become proficient in this art until he has done fifty resections. The idea is a comparatively new one in urology and its limitations have been the subject of many heated discussions in urologic sections. That it is the method of choice in median prostatic lobes, contracted prostatic necks, median bar formations and carcinoma of the prostate, I think no one will deny. It should not be assumed for one moment that resection is an innocuous procedure and, therefore, of minor consequence.

In prostatic obstructions in which there is a residual urine the patient should undergo the same preliminary catheter drainage and renal check-up that he undergoes prior to prostatectomy. Until the blood chemistry, cardiac action and blood pressure are within safe limits, no operator should assume any more risk here than he would be willing to assume if he were doing an open operation.

Experience has taught that, in doing resections, bleeding is by far the greatest hazard. Therefore, all bleeding points after each resection should be seared off by means of the coagulating current prior to further resection. Often one can see a large vessel and it is advisable to coagulate this prior to cutting in this area. Meticulous judgment should be exercised in the selection of fulgurating units. Tube machines cut quickly but coagulate poorly, while on the other hand spark gap machines do not cut as rapidly but their coagulating power is much more secure. Other points worthy of note are to cut only under running water and not to use currents that cut too deeply. Cases in which this has not been observed result in postoperative hemorrhages and occasionally fistulas. A large retention catheter should be placed in the bladder after the operation and this should not be removed until the fifth postoperative day, when the bladder is then filled and the patient requested to urinate. He is usually capable of voiding a large and forceful stream.

REPORT OF CASES

CASE 1.—O. N., a white man, aged 27, single, admitted to Barnes Hospital, Oct. 13, 1932, suffered from frequency, difficulty in starting the stream, and dribbling. The condition came on in 1924, when the patient noticed dribbling. This was followed by frequency and nocturia. At the time of admission,

the patient was voiding from one to three times each night. He was often annoyed with pain and burning when attempting to void.

The patient had had stomach trouble for years. He had had mumps, measles and childhood diseases. He had gonorrhea in 1926. An appendectomy was performed in 1923.

The patient's parents were living and well. A twin brother also had urinary trouble.

Physical examination was grossly negative. The blood pressure was 110 systolic, 66 diastolic. There was a stricture in the bulbomembranous urethra. An F. 16 sound was admitted. There was no enlargement of the prostate or vesicles. The sphincter tone was good.

The specific gravity of the urine was 1.017. The urine was acid and examination was negative for albumin and sugar. Microscopic examination gave negative results.

Blood examination revealed: red blood cells, 5,100,000; white blood cells, 6,408; hemoglobin, 90; nonprotein nitrogen, 30. The Kahn test was negative.

The stricture was dilated to F. 28 and a retention catheter was placed in the bladder for three days.

The cystoscope was passed after much manipulation when an obstruction was encountered at the prostatic neck. A fine and heavy type of trabeculation was seen over the lateral wall and the bladder dome. There was a gutter-like formation between the posterior prostatic lip and the interureteral ridge. A definite bar was observed just anterior to this area. There was also a finger-like tag of tissue extending from the right border of this bar. There was no enlargement of the lateral prostatic lobes. The external sphincter had good tone. There was residual urine of 240 cc.

The diagnosis was: 1. Stricture of posterior urethra. 2. Congenital median bar.

CASE 2.—O. N., a white man, aged 27, single, admitted to Barnes Hospital, Oct. 13, 1932, complained of dysuria, nocturia, and difficulty in starting the stream. The condition started in 1924 about the same time that his brother's trouble started with frequency of one and one-half hours. Once, four months before, he had been unable to void. At present he had difficulty in starting urination, with dribbling at completion of the act. During the night he urinated three or four times.

The patient had had the diseases of childhood. There was no history of gonorrhea or syphilis.

Physical examination was negative. The blood pressure was 112 systolic, 70 diastolic. The sphincter tone was good, the prostate small and soft.

An obstruction to the cystoscope was encountered at the prostatic neck. There was a residual urine of 400 cc. Fine trabeculations were present over the dome and the lateral wall. A gutter-like formation was present between the posterior lip of the prostate and Mercier's bar, identical with case 1. A definite bar was found anterior to this gutter. There was also some contracture of the bladder neck. The external sphincter was of fair tone and did not permit vision of the verumontanum on withdrawal of the cystoscope.

Both patients left the hospital six days after operation and neither one has shown residual urine since the operation. I might also add that they have experienced an entire abatement of symptoms since their release from the hospital.

COMMENT

I was particularly anxious to report these cases because of their oddity and because an exhaustive search of the literature failed to reveal similar anomalies. Here are twin boys, 27 years of age, whose facial characteristics are so similar that it is only with difficulty one can distinguish one from the other. Not only did their exterior but also their interior appearance prove to be similar, for when their bladders were examined cystoscopically identical malformations were found at the bladder neck.

Another peculiar circumstance was that the two boys started approximately at the same time to be annoyed with urinary symptoms, such as frequency, urgency

and nocturia, which prompted them at the same time to seek medical relief.

In both cases, after the vasa had been ligated, resection was done at one sitting under spinal anesthesia. They left the table with no bleeding and the return bladder flow showed but a slight pink the first twenty-four hours.

University Club Building.

STANDARDS AND LICENSURE IN OPHTHALMOLOGY

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Few would deny Emerson's pronouncement that "The first wealth is health." So essential to human happiness and prosperity is health and the normal functioning of the senses that it may be doubted whether any other profession carries so sacred a responsibility as that of the physician.

In no walk of life is the combination of high intelligence with thorough training so necessary as in the practice of medicine. A man with either mediocre intelligence or inadequate training is likely to commit fatal errors of judgment or execution, and, even though poor standards are excused in other occupations, they should be rigidly excluded as regards those whose duty it is to protect or restore the health of the body or its members.

The physician is interested in medical standards from two points of view: for the protection of the public and for the protection of the physician himself.

The physician is the principal guardian of the public in the standardization of medical practice, since the public cannot be expected to know so much about its own needs in this regard as the physician.

The physician has a perfect right to consider and protect his own interests in the standardization of medical practice, but he should never forget that the public interest is basic and will ultimately dominate the situation.

There are two principal ways in which the physician may protect the public from inferior medical standards. In the first place he may work directly toward improvement of standards. In the second place he may aim to increase the legal requirements for license to practice and may encourage legislation and regulation for the exclusion of impostors.

In working for betterment of standards by the provision of improved educational facilities and through the use of those facilities by himself and his colleagues, the physician is generally free from interference by the laity. But in the attempt to improve legal requirements the physician is often subjected to serious interference, because the public, through malign influence and the misunderstanding that comes from ignorance, often insists on giving the quack or the incompetent a free hand. Within the regular medical profession, real improvement in requirements for licensure does raise educational standards.

It is not so very long since the opportunity to practice the healing art depended primarily on the individual's determination to get his living by such practice, regardless of his ability to do so with safety to the public or with credit to himself. But gradually the

public has obtained some protection against medical quackery and inefficiency, at least within the regular medical profession.

The laws with regard to the practice of general medicine have long made the mistake of assuming that because a man had once graduated from a recognized medical college and had met the requirements of a state board of medical examiners he would for the rest of his life continue to be adequately qualified to practice medicine or surgery or both. Yet medical science is constantly changing; from time to time new facts and methods are being discovered and applied to the diagnosis, prevention or cure of disease.

An even more serious mistake in legal requirements for the practice of medicine has been the assumption that a general medical degree and license to practice were sufficient evidence of the physician's qualification to practice on any part of the body or to apply himself, without further challenge, to any chosen field of specialization. Alike within the medical profession and among the ranks of the legalized irregulars, the laws of this country still permit any physician to practice a specialty, no matter how limited his qualifications.

In this and other countries there has been strenuous opposition to any plan for requiring special license for special practice. Such opposition is largely based on conservatism, on a limited conception of public rights and professional responsibilities, or on an unwillingness to disturb what is more or less frankly regarded as vested professional interest.

At the International Ophthalmologic Congress in Amsterdam, existing facilities for the systematic study of ophthalmology were reviewed by Dr. Walter R. Parker of Detroit and Dr. Carl Lindner of Vienna. In connection with the committee's investigations, Professor Villard¹ of the University of Montpellier, France, furnished a report on the practice and teaching of ophthalmology in the European countries of Latin tongue; that is to say, in Belgium, France, Italy, Portugal, Rumania and Spain.

The title of ophthalmologist, or its equivalent, had not yet been recognized by law in Belgium, France, Portugal or Spain but had received such recognition in Italy and Rumania. In Germany and Austria, where social insurance has become so general, no one can be accepted by the insurance organizations as an ophthalmologist unless he has given proof of definite qualification in the specialty. In France the great majority of ophthalmologists belong to the Syndicat des Oculistes Français, an organization created for professional defense and not for scientific purposes but the statutes of which require, in addition to the national diploma of docteur en médecine, proof of a course of at least two years in official or private ophthalmologic clinics. Unfortunately the statutes of the syndicate do not demand an examination.

The saving grace in the physician is to think of himself as the patient. Looking at the question frankly, the physician would often demand for himself and his family something better than he gives his patients. Above all he would demand that the physician or surgeon whom he employed was not one of mediocre training even if this were the usual quality of professional training in the community in which he lived, but rather a physician of the best training, one with the highest standards of training and equipment in the applied science of medicine or in the special branch of medicine involved.

Read before the Section on Ophthalmology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. Villard, H.: *Arch. d'opht.* 4S:125 (Feb.) 1931.

In considering to what extent such an ideal can be attained, two problems have to be faced: (1) as to what improvements are possible in methods of training for special practice; (2) the advisability and possibility of requiring special license for such practice.

There are few ophthalmologists practicing today who could not find some points of weakness in their own training for special practice. Most of them, at best, after a general medical training and internship in a general hospital, have picked up haphazard a great deal of clinical experience but very little theoretical and laboratory foundation, in institutions for treating diseases of the eye: they have not been taught ophthalmology along systematic, scientific lines. Too often they know very little about the finer details of ophthalmic anatomy, physiology or pathology, or concerning physiologic optics. In only three or four institutions in the United States could they obtain at the present time a systematic course of teaching that would cover the whole field of ophthalmology.

Ultimately, it is probable that no one will be allowed to hold himself out as a specialist in any well defined branch of medicine and surgery without having presented clearly authenticated evidence of a minimum period of training in an institution properly equipped and designed to furnish this kind of postgraduate study, and without having shown a satisfactory aptitude in mastering the necessary details of information and technic. It will not be sufficient for the candidate to state that he has attended such and such an institution or that he has acted as assistant to some reputable practitioner of the specialty; but he will have to present credits just as rigidly established as those which must be accumulated before facing final examinations for the degree of Doctor of Medicine.

This will involve the naming of institutions whose courses of postgraduate study and whose demands on the postgraduate student are officially recognized as satisfactory; and this in turn will require creation of teaching staffs of acknowledged efficiency. It will further demand, on the part of the community or of the individual or of both, the expenditure of far more money than is now being applied specifically to postgraduate teaching and study.

In ophthalmology, such official requirements for standardization might well result in the creation of accepted textbooks dealing with individual phases of the subject, such as refraction, ophthalmoscopy, perimetry, ocular histology and pathology, and ocular surgery. It might involve organized cooperation between a national examining body (representing perhaps conjointly the leading institutions for ophthalmologic education and the leading ophthalmologic societies) and the licensing boards of the separate states. It might lead to the development of a group of teachers in ophthalmology whose activities were definitely aimed at meeting educational requirements for special practice.

The proposal to require a special license for special practice will be subject to much criticism and is likely to be slow of adoption. It could not fairly be made retroactive and would have to be limited to the new generation of specialists.

The activities of the American Board for Ophthalmic Examinations, the pioneer in this field, have undoubtedly tended to raise standards of graduate education in ophthalmology; and the experience of the board ought to be the most fruitful source of indication as to possible improvement in such education in this country.

It is an interesting fact that applicants for the certificate of the American Board for Ophthalmic Examinations, in specifying details of their training, are particularly fond of emphasizing time spent in the study of ophthalmic operations, but they are less prone to give evidence of systematic preparation in anatomy, pathology, physiologic optics and refraction. But proper standardization should imply that the ophthalmologist goes into practice proficient in every field of his specialty; and, if any distinction should be made, it would be proper to insist most positively on thorough training in those branches of ophthalmic science which have importance for the greatest number of patients. With a proper knowledge of anatomy, pathology and physiologic optics, the ophthalmologist will seldom fail to have a clear mental picture of what may happen or is happening to his patient. With a good knowledge of the technic of ophthalmic operations but without the more basic studies, he is likely to suffer from many misconceptions and to be guilty of many errors in diagnosis and treatment.

When medical licensure laws were first passed, it was practically necessary to accept as qualified those who had already spent some years in the practice of medicine after the sort of inadequate training which was then almost universal. For more or less similar reasons, when the American Board for Ophthalmic Examinations first came into existence it was at least highly expedient to accept many of the candidates largely on the ground of years of practice, especially if the record included a term of preparation in a clinical institution for diseases of the eye. It was at that time impracticable to demand that all such candidates should submit themselves to detailed examinations in the basic subjects, especially along the more theoretical lines. But the board has now been in existence for seventeen years, and for those who began ophthalmic practice either since or within a few years before the beginning of the board's activities it seems desirable that the board's certificate shall no longer be issued without actual examination, even though excellent records of clinical and other practical experience are furnished. Among those who practiced ophthalmology long before the American board came into existence, some exceptions might still be made.

Speaking individually, and not in behalf of the board as a whole, I doubt whether one day is adequate for the board's examination, and I feel that better standards could be maintained if a whole day were devoted to the practical examination and another day to a searching written examination. This of course would involve a still greater sacrifice of time by the members of the board.

Without ample time for examination, it is often difficult to arrive at a satisfactory conclusion as to whether some of the less brilliant or less thoroughly successful candidates deserve to pass or fail, and the tendency in this situation is to err on the side of generosity toward the candidate. In the long run it is unfair to the student as well as to the public to pass the former on inadequate grounds. In this connection it is interesting to note that the American Institute of Accountants, one of the most efficiently organized professional examining bodies in the United States, has passed only about 12 per cent of candidates taking the institute's examinations during the last three years.

With the development of higher standards of requirement for issuance of the certificate of the American Board for Ophthalmic Examinations, it becomes

more and more desirable that the board should seek to encourage and stimulate the provision of thoroughly systematized courses of instruction, in which teachers and students alike would keep steadily in view clearly defined requirements of the board; and ultimately it will probably become necessary for the board to undertake official recognition of clinical institutions, university schools, textbooks, and even individual and limited courses in different parts of the country, as applicable to a student's preparation for the board's examination.

Several university schools in the United States are already giving courses that harmonize with the board's purposes. When the student's preparation for practice and for the board's examination is chiefly carried on in a clinical institution not directly connected with a medical school, it will be necessary to introduce into such an institution a much more definite course of systematic instruction in theory as well as in practice than is usual at the present time.

Some of the activities here more or less vaguely suggested will make heavy demands on the time and energy of the board or on any similar organization, and such increase of activity will have to be met by increased financial resources, for otherwise it would prove impracticable to carry on the necessary investigations with regard to available schools and clinical institutions.

The more dependent the profession and the community become on the ministrations of specialists in various branches of medicine, the more necessary it is that any physician recognized as practicing a given specialty shall be reliable in knowledge and practice. The profession as a whole, and particularly the specialists themselves, are probably not yet ready to accept the idea that supplemental licensure should be required for special practice, although there is a steady increase in the number of those who feel that adequate standards will not be enforced until this further development occurs. The centralized governments of Europe will find less practical difficulty in establishing such legal regulations than will the United States.

Recognition by hospitals and educational institutions of the certificate of the American Board for Ophthalmic Examinations as a basis of acceptance of those holding themselves out to be ophthalmic surgeons may go far toward solving the problem in this country. Unfortunately, such a voluntary type of regulation will always favor the existence of loopholes through which the less competent may impose on the public and even on the general medical profession.

An interesting scheme for voluntary and local regulation of the problem of special practice has recently been put forward in New Jersey.² The state of New Jersey had apparently been threatened with the passage of a law with regard to specialization of so stringent a character as to be unpractical. The state medical society therefore adopted a plan for certifying specialists through a committee of the society.

It may be that in the state of New Jersey such a scheme will prove practicable and will not become ineffectual as the result of personal intrigue and favoritism. Much more desirable, if it could be accomplished, would be a national plan which would be acceptable to the individual states and which would avoid the ridiculous multiplicity of licensing bodies now resting as a plague on the general practice of medicine.

The question of national coordination for control of special practice has for some time been under consideration by the Council on Medical Education and Hospitals of the American Medical Association and also by the National Board of Medical Examiners. Ultimately, it seems logical to suppose that public interest will demand and accept the requirement that any one laying claim to qualification for special practice must obtain a special license justifying that claim.

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ABSTRACT OF DISCUSSION

DR. T. B. HOLLOWAY, Philadelphia: The meaning of the author is not clear when he states that the public interest is basic and will ultimately dominate the situation. If by interest he refers to the attention of the public, my opinion is that its chief concern is with the cost of medical care. On the other hand, if he means the benefit or the welfare of the public, if individuals and certain small groups are excluded, I question whether the public is interested in the standardization of medical practice, if one may judge from the action of its representatives in certain legislative bodies. This year a bill was introduced in the house of representatives of Pennsylvania that would concede to the optometrists the privilege of emergency treatment in diseases and injuries of the eyes. What is more, the representatives of the public in the house passed the bill, but it has not become a law. Time does not permit adequate discussion of Dr. Crisp's criticism of the laws that permit the medical graduate who has passed his state board examination to be regarded as adequately qualified to practice medicine or surgery all his life. Many states require in addition to this a hospital internship, and I believe that Pennsylvania was the first to adopt such a plan. His "more serious mistake" as this relates to unchallenged specialization would require even more time to discuss. I must be content to say, with some chance of being misunderstood, that up to the present it would have been a mistake to do otherwise. However, I do agree with him that, ultimately, satisfactory evidence of efficiency will be required before specialization will be recognized and permitted. The important question is, just how and when is this to be accomplished? I believe that the institutions and the teachers exist but there is need of money and of students who are willing to accept the training that may be provided. As to the money, few people, even in the medical profession, realize how much it costs to conduct properly a course in graduate education, even when clinical teachers serve without salary, although they may carry a schedule of 150 or more hours a year. As to students, there are not many, even today, who desire to take a comprehensive course of two, three, or more years. The author has referred to the American Board for Ophthalmic Examinations and has expressed his opinion that more than one day should be given to the examinations; with this I am in accord. Why the board should concern itself about the certification of a candidate for any society, I do not understand. It has no obligations to the Academy or to the American Ophthalmological Society, and none was thought of when the board was established. The increase in the opportunities for graduate work, as well as in the equipment and teaching, that has occurred in this country during the past twenty years has been a real achievement and is far greater than is generally recognized. Short courses of intensive instruction are now available in various portions of this country. A group of well known teachers have willingly given of their time to carry on these courses without compensation.

Descent of the Testes.—Many observations proclaim also the dependence of primary sex characteristics on the equilibrium of the endocrine glands. In this connection, the demonstrated function of the pituitary gland in promoting descent of the testes is of interest. The fact that of all mammals only man shows the presence of pituitary hormone in the blood throughout gestation may be correlated with the fact that man is the only animal with testes descended at birth.—Schloss, O. M.: Interpretation of Some Recent Advances in Medicine in Terms of Equilibrium, *Am. J. Dis. Child.* 46:1 (July) 1933.

Clinical Notes, Suggestions and New Instruments

WATER HEMLOCK POISONING

MYRL M. MILLER, M.D., AKRON, OHIO

Cases of hemlock poisoning, though relatively unusual, are not at all rare. The following case is reported not because of the rarity of the condition but because of the striking efficacy of the treatment employed; namely, the use of sodium amytal intravenously.

"The number of poisonous plants which are to be found growing wild or in gardens is much larger than is generally supposed, and the cases of poisoning annually reported are more numerous than is commonly realized. One of the most common ways in which poisoning occurs is from the eating of underground parts of plants which resemble more or less closely species that are known to be edible. Thus it has often happened that young folks off for a ramble in the country come across some wild plant that suggests parsnip or some similar herb and has an attractive looking root which has perhaps been uncovered by recent rains. Being hungry the tramps bite off a piece of the root, and finding that it tastes good they continue to eat it. Before long, distressing symptoms appear, leading within a few hours to violent convulsions and perhaps death. The plant of which they have eaten is probably the water hemlock, one of our commonest swamp or brookside plants and one of the most deadly. Fatal cases occur almost every year, especially among children, and many cattle are poisoned by eating various parts of the plant. Sometimes poisoning results from drinking water in which the roots have been bruised by trampling. The plant should be uprooted and destroyed wherever found. Another herb closely similar to the water hemlock and too common along waysides is the poison hemlock. This is most probably the plant by which Socrates was poisoned at the hands of the Athenians. Recent cases of poisoning have resulted from eating the root by mistake for parsnip, the leaves for parsley, and the seeds for anise. Children have been poisoned by blowing whistles made from the hollow stem."¹

REPORT OF CASE

C. S., a boy, aged 10 years, was brought to the emergency ward of the City Hospital of Akron, the evening of March 31, 1933, in convulsions. The intern had administered morphine sulphate, one-eighth grain (0.008 Gm.) hypodermically, 50 per cent magnesium sulphate, 1 cc. intramuscularly, and chloral hydrate, 30 grains (2 Gm.) by rectum. The chloral had not been retained. I found the child having extremely violent convulsions resembling those of strychnine poisoning. He was unconscious, cyanotic and continuously rigid, with the jaws clenched on a mouth gag held in place by two nurses; the pulse was feeble, and the pupils were widely dilated. Severe tonic seizures occurred every few minutes, accompanied by opisthotonos, cessation of respiration, extreme cyanosis and bloody froth at the mouth. No examination was attempted other than the inspection implied by the aforementioned description. The only significant points in the history were:

(a) The patient had cut his leg with an ax while chopping sticks one week previously.

(b) On the day of admission, he had been out in the meadow and had eaten some kind of plant.

Shortly after this history was obtained a neighbor boy brought in a tuberous root which he had seen the boy eating. The father looked at, smelled and tasted it and expressed the opinion that it was a wild parsnip, which he knew to be poisonous.

The boy had come in from his excursion apparently perfectly well, played with his dog, suddenly complained that he didn't feel well, walked upstairs, screamed for his mother to come up, saying that he felt awfully sick, and immediately passed into convulsions as described. It was not known how long before symptoms appeared that the child had eaten of the plant.

I gave the child 3 cc. more of 50 per cent magnesium sulphate intramuscularly and 15 grains (1 Gm.) more of chloral hydrate by rectum, which was retained. The convulsions continued unabated and with alarming severity. In view of recent reports of successful treatment of strychnine poisoning with sodium amytal intravenously, I then ordered sodium amytal, 3 grains (0.2 Gm.) given slowly intravenously. In about thirty seconds the child relaxed and the mouth gags could be removed. He went into a deep sleep with slow respirations, normal pulse, good color and contracted pupils. He had no more convulsions, but a few hours later he became hyperactive and "jumpy." He was given 1½ grains (0.1 Gm.) more of sodium amytal intravenously and remained asleep till the following morning, when he appeared perfectly normal, except that he was drowsy all day. The next day he was perfectly well.

The plant root was examined by Dr. Paul Acquarone, professor of botany at the University of Akron, who identified it as the tuberous rhizome of *Cicuta maculata* L., a variety of water hemlock. Dr. Acquarone says:

"There are a dozen or more species of *Cicuta*, chiefly European. Only three occur in the eastern two thirds of the United States. Of these, *C. maculata* is the only one producing tubers as large as the specimen you brought me. Incidentally, while all species of *Cicuta* are poisonous, *C. maculata* is by far the most toxic and is also the most common and the most pleasantly scented."²

COMMENT

The United States Dispensatory³ gives the following information regarding hemlock poisoning:

"*Cicuta*. *Cicuta virosa* L. Water Hemlock. Cowbane.—A perennial, umbelliferous European plant, growing on the borders of pools and streams. It is very poisonous to most animals, though said to be eaten with impunity by goats and sheep. A number of the species of *Cicuta* are intensely poisonous; indeed, the statement is made that *C. maculata* L. is the most poisonous plant native in the United States. . . . From *C. virosa*, Van Ankum obtained a resinous body which was intensely poisonous, resembling picrotoxin in its physiologic action, and to which he gave the name of cicutoxin. . . . The presence of a volatile alkaloid resembling coniine (the active principle of poison hemlock), and termed cicutine, has been observed by Wittstein and Buignet. According to Jacobson, cicutoxin is a complex derivative of pyrone and is fatal to lower animals in doses of 50 mg. per kilogram.

"The water hemlock grows in meadows and along the borders of streams throughout the United States. In several instances children have been fatally poisoned by eating its root. This consists of several oblong, fleshy tubers, sometimes as long as the finger, spreading out from the base of the stem, and having an odor and taste not unlike those of parsnip. Egda⁴ has collected the history of forty-six cases of poisoning by *Cicuta*, of which twenty-one were fatal. Nausea, vomiting and convulsions occurred in practically all the cases. In most of them there was also bloody froth at the mouth and in many dilated pupils and unconsciousness. In his own case there was cyanosis, apparently from interference with the respiration by the convulsions.

"In *Cicuta* poisoning there is generally violent vomiting, followed by vertigo, cold, clammy skin, slow feeble pulse, general convulsions and later paralysis, unconsciousness and dilated pupils."

Cicuta should not be confused with its relative conium, commonly called poison hemlock, *St. Bennett's herb* or fool's parsley, because of the difference in their active toxic principles and in their effects. The active principle of the latter is a volatile alkaloid, coniine or conine. According to the U. S. Dispensatory,⁵ "Hemlock or conium is supposed to be the narcotic used by the Athenians to destroy the life of condemned individuals, and by which Socrates and Phocion died. The most important effect of the alkaloids of conium is a paralysis of the peripheral motor nerve endings. In the account

2. Acquarone, Paul: Personal communication to the author.

3. Remington, J. P., and Wood, H. C., Jr.: United States Dispensatory, ed. 20, Philadelphia, J. B. Lippincott Company, p. 1322.

4. Egda⁴, Anfin: A Case of Poisoning Due to Eating Poison Hemlock (*Cicuta Maculata*). Arch. Int. Med. 7: 348 (March) 1911.

5. United States Dispensatory, pp. 1333-1335.

1. Sargent, F. L.: Plants and Their Uses, New York, Henry Holt & Co., 1913, pp. 192-194.

of the death of Socrates, reference is made to loss of sensation as one of the prominent symptoms of his poisoning and there is evidence that the drug has an effect upon the sensory as well as the motor nerves, but the dominant action is certainly upon the motor system. It has been used as an antispasmodic drug, but Hayashi and Muto have shown that the phrenic nerve is more susceptible to the drug than the other motor nerves of the body."

These differences in action, the cicutoxin of water hemlock (*Cicuta*) causing convulsions, whereas the coniine of poison hemlock (*Conium*) causes loss of sensation and paralysis, supply additional confirmation that the tuberous rhizome ingested in this case of hemlock poisoning belongs to the water hemlock variety rather than to the so-called poison hemlock.

SUMMARY AND CONCLUSION

1. The active toxic principle of water hemlock is cicutoxin, which causes violent convulsions. There are differences between the cicutoxin of water hemlock and coniine, the toxic principle of poison hemlock (*Conium*).

2. Recovery was prompt following control of the convulsions with sodium amytal intravenously. It appears that the action of sodium amytal in the treatment of convulsions due to hemlock poisoning is similar to that reported in cases of strychnine poisoning.

3. It appears that cicutoxin is either eliminated or detoxified completely in a short time and that all that is necessary in the way of treatment is to control the convulsions.

4. Sedation with sodium amytal or some similar preparation is a life saving measure definitely indicated in cases of water hemlock poisoning.

363 South Arlington Street.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED THE PUBLICATION OF THE FOLLOWING REPORT.

H. A. CARTER, Secretary.

OXYGENAIRE ACCEPTABLE

The Oxygenaire, an oxygen therapy tent, manufactured and sold by the American Hospital Supply Corporation, 15 North Jefferson Street, Chicago, has been submitted to the Council on Physical Therapy for consideration and report. This tent is recommended by the firm as satisfactory for use whenever oxygen therapy is indicated. The conditions under which oxygen therapy is advisable are described in the Council-adopted article "Oxygen Therapy," by Dr. Walter M. Boothby.¹ Unlike other oxygen tents examined by the Council, this unit is not provided with a motor-fan assembly or an injector for circulation of the oxygen-rich atmosphere. To circulate the oxygen-rich mixture, the Oxygenaire relies on the convection currents set up by the energy obtained from melting ice. The apparatus stands 60 inches high in a working position. It has an overall width of about 26 inches and requires only a floor space of about 2 by 3 feet for storage. It is adjustable in height from 24 inches to 44 inches, giving a range of practically 20 inches. The shipping weight is 300 pounds.

The chassis is mounted on four ball-bearing swivel casters 5 inches in diameter with rubber tires, so that ready adjustment may be made in any direction. The platform of the chassis is black enamel. The remainder of the chassis is finished in three tones of pastel green, and the apron covering the tank and the cabinet are finished in a light pastel green that matches the green canopy. The cabinet is 26 inches high, 24 inches wide and 19 inches deep. All inside parts are made of rustless material. The ice basket is 20 inches long, 10 inches wide and 14 inches deep and holds about 65 pounds of ice. A shallow soda lime tray designed to maintain the proper carbon dioxide concentration is placed immediately above the ice basket for ready placement or withdrawal.

There are two tent units, one regular size 26 by 24 inches at the top, which is held about 30 inches above the bed, allowing

a little more than 10 cubic feet of air space inside. The larger tent, all-over-bed size, has the same measurements at the top and is supported the same way, but the skirt is large enough to tuck under the mattress all the way round the bed. Each tent has six small windows, two on top, two on each side and one large one opposite the cabinet. The tent is equipped with a large sleeve, which is self closing and placed conveniently opposite the cabinet. The regular size tent is standard and the large size tent is optional. The tent is made of a double faced rubber surfaced material developed to have a great deal of give and stretch for wearing purposes and is finished in an attractive pastel green. All exposed metal parts are finished in dull chromium plate.

When in operation, the ice basket needs an additional supply of ice every three or four hours to insure maximum efficiency. With the full ice supply (65 pounds) and a room temperature of 88 F., the inside tent temperature may be maintained at about 65. This may be further reduced by using salt to accelerate the melting of the ice; naturally, more ice must be used. In ten minutes the tent temperature may be reduced over 60 per cent of the maximum drop. In twenty minutes the full drop in temperature may be reached. The addition of salt to the ice reduces the temperature about 5 degrees lower. Salt is needed only in extreme cases and on the hottest days in summer.

The atmospheric circulation in the Oxygenaire has been charted and with a full ice basket there is practically a complete change of air mixture every minute. With the ice chest half full, this flow is reduced about 20 to 25 per cent. To secure the best results, the ice basket should be kept full, or nearly so.

Oxygen is introduced into a compartment immediately below the ice water in the bottom of the cabinet. It flows through a series of holes in the lower front panel of the cabinet right into the tent not too near the patient's face. This makes it possible to maintain a continuous flow of oxygen into the tent, even though, for the purpose of re-icing, the shutters temporarily close off the ice compartment from the tent. A patient need never be without oxygen.

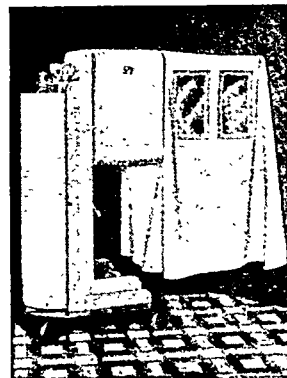
The ice compartment is accessible by means of a side door which is self supporting in a level position. The ice basket can be pulled out horizontally, making it simple to add ice when needed.

The tent is so designed that it may be folded back against and over the cabinet, so that in storage it occupies a minimum amount of room. It does not need to be detached or disconnected in any way to be folded back.

The oxygen regulator assembly is permanently mounted to the chassis. It is expected that this may help eliminate breakage through handling. It is fitted with two gages, one of which registers pounds of pressure in cubic foot capacity of the tank, the other of which registers the flow in liters from 1 to 15, all of which is graduated by single liters from 1 to 15. This assembly includes a sight-flow bottle by which the oxygen bubbles through a water jar to make it possible for the operator to recognize at a glance that oxygen is actually flowing. The assembly is so designed that the connecting nut is exactly located for attachment to the standard commercial oxygen tank.

In the back of the cabinet the Oxygenaire is equipped with a hose connection cutoff. This serves two purposes. Either additional carbon dioxide may be introduced into the air circulation through this inlet, or it may be used as an outlet for making a gas analysis and checking both oxygen and carbon dioxide concentrations in the tent. A rubber hose attached from the gas analyzer to this connection will give the operator a typical sample of the atmosphere inside the tent.

Physically, the Oxygenaire is well constructed, attractive and simple in operation. Being a motorless tent, it depends on its energy for circulation by convection currents generated by melting ice in the chamber on one side and the heat of the patient



Oxygenaire

1. Boothby, W. M.: Oxygen Therapy, J. A. M. A. 99: 2026 (Dec. 10), 2106 (Dec. 17) 1932.

in the tent proper on the other, between which there is free communication of air mixture. Smoke tests indicate a satisfactory circulation of air within the tent, depending on the amount of ice in the chamber.

The Council test revealed that an oxygen saturation of 50 per cent may be obtained in fifteen minutes by a flow of 7 or 8 liters a minute, and this concentration may be maintained with a continuous flow of from 1.5 to 4 liters a minute, depending on how carefully the patient is tucked in or how well the mattress is rubberized. By holding down on the oxygen by-pass valve, the tent may be flooded with oxygen more readily.

The carbon dioxide concentration tended to rise 3 or 5 per cent with toxic manifestations in the earlier investigations of this tent, but with an improvement of the soda lime tray a level of from 1 to 1.5 per cent is readily maintained. Circulation within the tent is efficient when the tray is only thinly covered with soda lime. The soda lime tray must be serviced two or three times daily.

Temperature and humidity were very well controlled in test cases of patients having pneumonia, heart failure, edema of the lung due to drowning and also in tests on normal subjects. During a recent heat wave, when the temperature was over 90 in the ward, a temperature of 71 or 72 was maintained in the tent.

The Council believes that this is a simple and efficient type of oxygen tent. However, like all oxygen therapy apparatus, accurate check on the concentration of oxygen and carbon dioxide must be made regularly to insure the proper control. The valves and flow meters operate satisfactorily.

The Council on Physical Therapy declares the Oxygenaire acceptable for inclusion in its list of accepted devices for one year.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

TIDAL WAVE FLOUR—BLEACHED TIDAL WAVE BAKERS FLOUR—BLEACHED

Manufacturer.—Texas Star Flour Mills, Galveston, Texas.

Description.—Hard winter wheat "long patent" flours; bleached.

Manufacture.—Selected hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-ninth ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (1 part to 50,000 parts flour).

Claims of Manufacturer.—For general baking in the home and bakery.

MCCORMICK'S BEE BRAND CINNAMON (POWDERED)

SAIGON CINNAMON BEE BRAND (STICKS)

CEYLON CINNAMON BEE BRAND (STICKS)

BATAVIA CINNAMON BEE BRAND (STICKS)

Manufacturer.—McCormick and Company, Inc., Baltimore.

Description.—Ground bark of cinnamon cassia; or dried strips of cinnamon cassia bark from the Far East.

Manufacture.—The ground cinnamon is prepared from dry barks of cinnamon cassia in China, Java or other Far East countries. The first year's growth produces a slender twig from which the bark is easily stripped in the spring. As the trees grow older, the bark from shoots and boughs becomes heavier and thicker. In harvesting the cinnamon bark, the shoots are gathered from the first and second year's growth,

tied in bundles and stored in sheds for a short time, after which the bark is easily removed. The stripped bark is allowed to dry, is exported to the company's packing plant, is cleaned, and packed ground or whole in tins or cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	8.1
Total ash	4.2
Acid insoluble ash.....	0.1
Nonvolatile ether extract.....	3.2
Volatile ether extract.....	4.3
Protein (N × 6.25).....	3.7
Crude fiber	24.1
Carbohydrates other than crude fiber (by difference)...	52.4

Claims of Manufacturer.—Conforms with the respective United States Department of Agriculture definition and standard.

GERBER'S STRAINED PEAS

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Strained cooked green peas retaining in high degree the natural vitamin and mineral values; the coarser fibrous material is removed. No added seasoning or sugar.

Manufacture.—Sweet wrinkled varieties of peas grown from selected seed under company supervision are harvested at the proper state of maturity, promptly washed, inspected, cooked, sieved, canned and processed as described for Gerber's Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

Analysis (submitted by manufacturer).—

	per cent
Moisture	87.3
Total solids	12.7
Ash	0.4
Fat (ether extract).....	0.3
Protein (N × 6.25).....	3.2
Reducing sugars before inversion (as invert).....	0.2
Sucrose (copper reduction method).....	2.9
Starch (acid hydrolysis method).....	3.6
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)...	8.4

Calories.—0.5 per gram; 14 per ounce.

Vitamins, Minerals and Claims of Manufacturer.—See Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

HYGEIA PURE STRAINED PRUNES FLAVORED WITH LEMON JUICE CONTAINS ADDED VITAMIN D (60 STEENBOCK VITAMIN D UNITS PER FLUIDOUNCE)

Manufacturer.—Snider Packing Corporation, Rochester, N. Y.

Distributor.—Hygeia Nursing Bottle Company, Inc., Buffalo.

Description.—Sieved prunes flavored with lemon juice; with added vitamin D (viosterol), 60 D units per fluidounce. The D units are those defined by the Council on Pharmacy and Chemistry of the American Medical Association (New and Nonofficial Remedies, 1933, p. 428). One fluidounce is equivalent in vitamin D to the D content of one teaspoonful of cod liver oil (60 D units).

Manufacture.—Dried, pitted prunes are soaked in cold water and simmered for thirty-five minutes at 85 C. in an atmosphere of steam; sufficient lemon juice and viosterol in corn oil are added to produce a citric acid content of from 0.5 to 0.6 per cent and a vitamin D content of 60 D units per fluidounce in the final product. The mixture is heated two minutes, pureed, heated to 88 C. in an atmosphere of steam, filled into cans which are sealed at 82 C., cooled and packed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	70.4
Total solids	29.6
Ash	0.9
Sodium chloride (NaCl).....	0.03
Fat (ether extract).....	0.7
Protein (N × 6.25).....	1.0
Reducing sugars as invert sugar.....	18.8
Sucrose	0.0
Crude fiber	0.5
Carbohydrates other than crude fiber (by difference).....	26.0
Titrate acidity as citric acid.....	0.5

Calories.—1.1 per gram; 31 per ounce.

Vitamins.—See this section for Hygeia Pure Strained Peas. Contains Vitamin D (THE JOURNAL, Feb. 13, 1932, p. 555).

Claims of Manufacturer.—Recommended for infants, children, convalescents and in special diets. Prepared to contain 60 D Steenbock units per fluidounce and largely retain the natural vitamin and mineral values of prunes.

(1) KAMO BRAND AMBER SYRUP
(CORN SYRUP 85%, REFINERS' SYRUP 15%)

(2) ANGEL FOOD BRAND GOLDEN
BROWN SYRUP
(CORN SYRUP 85%, REFINERS' SYRUP 15%)

Packer.—Wheeler-Barnes Company, Minneapolis.

Distributors.—1. Paxton and Gallagher Company, Omaha.
2. Winston and Newell Company, Minneapolis.

Description.—Corn syrup flavored with refiners' syrup; the same as Golden Oak Brand Amber Corn Syrup (Corn Syrup flavored with Refiners' Syrup) (THE JOURNAL, Dec. 3, 1932, p. 1948).

ROUNDY'S SUPREME MIXED VEGETABLES

Packer.—The Larsen Company, Green Bay, Wis.

Distributor.—Roundy, Peckham & Dexter Company, Milwaukee.

Description.—Mixture of carrots, potatoes, celery, green beans, cabbage, peas, corn, lima beans, onions, sweet peppers, salt and water prepared by efficient methods for retention in high degree of the natural mineral and vitamin values of the respective vegetables. No added sugar or salt. The same as Larsen's Veg-All, "A Magic Garden" for Soups, Salads, Vegetable Dishes (THE JOURNAL, Aug. 12, 1933, p. 535).

CANOVA BRAND COFFEE (GROUND)

Manufacturer.—Maury-Cole Company, Inc., Memphis, Tenn.

Description.—Ground roasted coffee sealed in tins in a "vacuum" (2 inches mercury pressure).

Manufacture.—Different varieties of "green coffee" are blended in mixers in units of approximately 1,200 pounds; a strong draft of air removes foreign material. The coffee is roasted at 180 C. for thirty minutes; a definite quantity of water is injected into the roasters to stop the roasting quickly. The coffee is air cooled and passed through a "stoner" to remove material heavier than coffee, and at the same time air blasts remove light materials. It is ground to the desired granulation for the different methods of beverage preparation and passed through a "normalizer" to obtain a uniform distribution of differently sized particles. The prepared coffee is automatically sealed in tins in a "vacuum" (2 inches mercury pressure).

Analysis (submitted by manufacturer).—

	per cent
Moisture	4.8
Soluble solids	5.1
Ash	3.3
Petroleum ether extract	10.3
Total nitrogen	2.6
Protein (noncaffeine N \times 6.25)	14.8
Reducing sugar as invert sugar	0.1
Sucrose (copper reduction method)	0.6
Caffeine	0.9
Crude fiber	21.1
Carbohydrates other than crude fiber (by difference)	44.8
Total acidity	173 cc 0.1 N alkali per 100 gram coffee
Chlorides	trace

Claims of Manufacturer.—Sealed in "vacuum" to retain freshness and flavor.

CAREY'S IODIZED SALT (FREE RUNNING)

Manufacturer.—The Carey Salt Company, Hutchinson, Kan.

Description.—Table salt containing 0.7 per cent added magnesium carbonate and 0.02 per cent potassium iodide.

Manufacture.—Carey's Free Running Salt (THE JOURNAL, Aug. 26, 1933, p. 676) is admixed with 0.02 per cent potassium iodide and 0.7 per cent magnesium carbonate.

Analysis (submitted by manufacturer).—

	per cent
Moisture	0.01
Calcium carbonate	0.02
Calcium sulphate	0.82
Calcium chloride	0.03
Magnesium chloride	0.02
Magnesium carbonate	0.65
Sodium chloride (NaCl) by difference	98.4
Iron and aluminum oxides	0.01
Potassium iodide	0.02

Claims of Manufacturer.—This iodized salt is for all table and cooking uses of salt. The magnesium carbonate tends to

preserve its free running qualities. The iodine in the salt aids in preventing goiter caused by insufficient iodine in the diet. Used daily as the only salt on the table and in cooking, it richly supplements the iodine of diets deficient in that element. Does not cake or harden in the package.

CURTISS BABY RUTH ANISE CANDY TABLETS
CURTISS BABY RUTH CLOVE CANDY TABLETS
CURTISS BABY RUTH LEMON CANDY TABLETS
CURTISS BABY RUTH LIME CANDY TABLETS
CURTISS BABY RUTH ORANGE CANDY TABLETS

CURTISS BABY RUTH PEPPERMINT
CANDY TABLETS

CURTISS BABY RUTH WINTERGREEN
CANDY TABLETS

CURTISS BABY RUTH WILD CHERRY
(IMITATION) CANDY TABLETS

CURTISS BABY RUTH ROOT BEER
CANDY TABLETS

Manufacturer.—Curtiss Candy Company, Chicago.

Description.—Confection tablets containing sucrose, corn syrup and stearic acid; respectively flavored with U. S. P. oils of anise, clove, lemon, lime, orange, peppermint or wintergreen; or with imitation wild cherry, or root beer (oil of sassafras and U. S. P. methyl salicylate) flavor.

Manufacture.—The semiplastic mix of sugar and corn syrup is spread on muslin trays in a warm room to dry, is mixed with the respective flavors and stearic acid, and finely ground and pressed into small disk tablets, which are automatically wrapped.

Stearic acid, a high melting point (65 C.) fatty acid, is added to lessen metallic wear of punch bars.

Analysis (submitted by manufacturer).—

	per cent
Moisture and volatile substances	1.6
Ash	0.1
Fat (ether extract)	0.6
Protein (N \times 6.25)	0.0
Reducing sugars as dextrose	7.4
Sucrose (copper reduction method)	79.2
Crude fiber	0.0
Carbohydrates (by difference)	79.7

Calories.—4.0 per gram; 114 per ounce.

REPORTS OF THE COMMITTEE

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORTS.

RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

PHROSTED PHROOT PIE (PINEAPPLE-CHERRY
COMBINATION) AND PHROSTED PHROOT
PIE (PINEAPPLE)

The Frosted Fruit Corporation, Chicago, submitted to the Committee on Foods the two products "Phrosted Phroot Pie (Pineapple-Cherry Combination)" and "Phrosted Phroot Pie (Pineapple)" prepared, respectively, from frozen mixtures of canned crushed pineapple, canned cold packed cherries, sucrose syrup and gelatin and of canned crushed pineapple, sucrose syrup and gelatin.

Discussion of Names, Labels and Advertising.—The designation "Phrosted Phroot" signifies an unmixed frozen fruit, whereas frozen fruit is only one of the ingredients of the articles; the fruit is admixed with sucrose, water and gelatin. The designation "Phrosted Phroot," therefore, is inappropriate. Some simple descriptive statement, such as "fruit, syrup and gelatin," accompanying the name "Phrosted Phroot" would inform the consumer of the true nature of the articles and avoid possible deception.

The manufacturer was advised of these opinions and recommendations but has not demonstrated willingness to act thereon. These products will therefore not be listed among the Committee's accepted foods.

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SATURDAY, SEPTEMBER 9, 1933

THE N. I. R. A. DRUG TRADE CODE AND THE DOCTOR

The medical profession is concerned not only with its direct relations to the National Industrial Recovery Act but also with the code for the retail drug trade and possibly other codes. There is danger that provisions involving the medical profession, hospitals, dispensaries and similar institutions may react to the disadvantage of the public. The proposed code of fair competition for the retail drug trade, formulated by representatives of the National Association of Retail Druggists and the American Pharmaceutical Association and by others, August 26, embodies provisions that may have that effect. These provisions are susceptible, apparently, also of innocuous interpretations. There is no reason, however, why the code should not be made clear.

The code is worded so as to apply "to any individuals or organizations engaged in the selling at retail of drugs, medicines, cosmetics, toilet preparations and drug sundries." Under such language, it is not impossible to hold that a physician, a hospital or a dispensary that dispenses medicines to patients and collects even the actual cost of the drugs dispensed sells those drugs at retail and is therefore within the purview of the code. The code proposes, furthermore, to define as drugs "all devices, intended to affect the structure or any function of the body of man or other animals." Obviously, this would bring under the retail drug code every optician and optometrist who supplies glasses, every dentist who supplies his patients with false teeth, and every surgical supply dealer who sells trusses, prosthetic devices and similar wares, for they would be "drugs" under the proposed code, and those who sold them at retail would be members of the drug trade.

This proposed code is susceptible of being construed to bring within its terms every drug room in every hospital and dispensary in the country, where any charge whatever is made for drugs, and therefore to require the constant presence of one or more registered pharmacists. The code provides that the term "drug

store" or "pharmacy" means "a retail establishment primarily engaged in the business of compounding and dispensing physicians' prescriptions and the selling of drugs, medicines, chemicals, and allied items and which place of business shall at all times be under the direct and personal supervision of one or more registered pharmacists." Hospitals, dispensaries and other institutions maintaining drug rooms and making any charge for drugs supplied would be members of the drug trade and subject to all of the provisions of the code for retail druggists.

The retail drug code proposed by the National Association of Retail Druggists and the American Pharmaceutical Association prohibits giving "any trade allowance" to any purchaser in connection with the sale of any product or article, or delivering to such purchaser in connection with such sale any other merchandise of any description, on payment in accordance with the provisions of this code. The obvious purpose of this provision is to require uniformity of prices to all comers, and the code itself makes no exception permitting special prices to physicians, dentists, nurses, veterinarians and hospitals. Those responsible for the framing of the proposed code, however, propose that a note be appended, providing that nothing in the code shall prevent any person from selling any drug or drug sundry at retail at a different price to a physician, nurse, dentist, veterinarian or hospital. Why there should be any unwillingness to make this exception a part of the code itself, instead of appending it as a note, is not clear, if it is to be operated as a part of the code. Neither is it clear why the granting of professional and institutional prices to physicians, nurses, dentists, veterinarians and hospitals should be limited to sales "at retail," whatever that phrase may be construed to mean.

While the proposed drug trade code is subject to the criticisms stated, and to the further criticism that no provision is made for representation of consumers on the governing board that it is proposed to create to administer it, the code does contain an admirable provision concerning retail advertising. Under this provision, no member of the retail drug trade may use advertising—whether printed, radio, display or of any other nature—"which is inaccurate and/or in any way misrepresents merchandise (including its use, trademark, grade, quality, quantity, substance, character, nature, origin, size, material, content or preparation), or credit terms, values, policies or services, nor shall any member of the retail drug trade use advertising or selling methods which tend to deceive or mislead the consumer including 'bait' offers of merchandise." If the National Recovery Administration can induce all branches of the drug trade to accede to and enforce such a provision with respect to the advertising of drugs, it will accomplish a moral and health benefit that alone will be well nigh sufficient to justify its existence.

DIURNAL CHANGES IN BODY TEMPERATURE

Despite the marvelous devices at the disposal of the organism for adjusting itself to an increment or a decrement of heat in the internal or the external environment, the adjustments are never instantaneous. Broadly speaking, the temperature of man is constant; he is a homoiothermic individual rather than a hetero-thermic animal that exhibits a temperature little different from that of its surroundings. Nevertheless the temperature of man almost invariably rises even after slight muscular exercise, and some time may elapse thereafter until the "normal" figure is again reached. Even William Beaumont recognized this in his observations on Alexis St. Martin through a gastric fistula more than a century ago. The second important fact is the undisputed existence of a diurnal variation of human temperature, often amounting to a degree Fahrenheit or more in the course of twenty-four hours.

Every physician has learned to take cognizance of this fluctuation in evaluating the temperature records secured in his examination of patients. Most persons show a temperature curve with a maximum in the afternoon and a minimum in the early hours of the morning. Years ago there was considerable debate as to whether this diurnal variation was due to external, or cosmic, causes rather than to changes in the person involved. Two physiologists, R. B. Gibson and W. A. Osborne, made observations on themselves while traveling half way round the world. During the period there was, of course, a gradual reversal of the relative time of day and night. The body temperatures retained their usual relations to the routine of the person involved.

In the latest study of the diurnal temperature changes in man, Kleitman and Doktorsky¹ of the Department of Physiology at the University of Chicago have considered the effect of the position of the body and of sleep on the rectal temperature. The general trend of the body temperature on lying down, before, during and after sleep, is downward. The Chicago physiologists conclude that a change in the body from vertical to horizontal leads to a fall in temperature. If the supposition that this is due mainly, if not entirely, to muscular relaxation is correct, they add, it would indicate that the diurnal temperature curve may be due to a diurnal change in the tonus of the skeletal musculature and that the downward trend of the temperature curve in the evening represents a gradually increasing muscular relaxation. This would explain why, if one stays awake all night, somnolence becomes increasingly difficult to resist until about 3 or 4 o'clock in the morning, afterward progressively decreasing in intensity. Under ordinary conditions, going to bed at night when the muscle tonus is low leads to a further decrease in tonus (as indicated by the low temperature), thus pro-

ducing an additional decrease in the number of proprioceptive impulses reaching the cerebral cortex and making continued wakefulness impossible.

After the onset of sleep the temperature may or may not show a renewed drop, depending on the degree of muscular relaxation already attained and on the time of the day or night. Kleitman² has also attempted to discover whether or not diurnal sleep can be brought into a causal relationship with some of the other diurnal changes. The subjective manifestations are familiar to every one. As Kleitman has pointed out, the diurnal sleep habit manifests itself in a state of drowsiness which gradually overtakes one in the evening, leading to a disinclination to continued wakefulness. Depending on the regularity of one's daily routine, this drowsiness may or may not appear at a certain hour and may or may not be allowed to develop to the point of practical irresistibility. Usually one cooperates by retiring into a quiet dark room and lying down on a comfortable couch, sleep readily supervening. Under unusual conditions when unvaried events in the environment cause a continued stream of impulses to reach the central nervous system from the different sense organs, the onset of sleep may be delayed far beyond the customary hour of retiring. Investigations² at the University of Chicago indicate that there is a diurnal variation in the speed and accuracy of performance in man, with a maximum in the afternoon and minima early in the morning and late at night. This variation, like that in body temperature and urinary excretion of phosphates, may be due to a diurnal rhythm in the tonicity of the skeletal musculature, which is probably responsible for the development and persistence of the diurnal sleep habit.

THE ACID FACTOR IN PEPTIC ULCER

The old question Why does the stomach not digest itself? used to evoke endless discussion; the fact that it does digest itself, locally at least, in the case of peptic ulcer is equally mysterious and, of course, of far greater practical importance. The tremendous clinical and experimental work on record has led to the formulation of a variety of theories, seldom supported by adequate evidence. Embolic, toxic, chemical, bacteriologic or allergic factors, and not unusually a combination of part or all of them, may be emphasized. The true explanation still remains a challenge to medical progress.

When pathogenesis is not well understood, therapy also is a field for conflict and dispute. In the case of peptic ulcer the polemics have at times waxed widely and furiously. The battle still smolders occasionally not only between the advocates of medical versus surgical treatment but also between various methods in each group. Medically, a number of different dietetic

1. Kleitman, Nathaniel, and Doktorsky, Abraham: The Effect of the Position of the Body and of Sleep on Rectal Temperature in Man, *Am. J. Physiol.* 104: 340 (May) 1933.

2. Kleitman, Nathaniel: Studies on the Physiology of Sleep: VIII. Diurnal Variation in Performance, *Am. J. Physiol.* 104: 449 (May) 1933.

regimens are offered, most of them variations of the Sippy diet; in addition, a large number of other remedies are recommended, such as nonspecific protein therapy, powdered mucus and "antipepsin" injections. Surgically, a number of different operations are in current use and there is still a great dispute between the advocates of gastric resection and of gastro-enterostomy. The average physician therefore looks to newer evidence which holds promise of explaining the why of gastric and duodenal ulcer so that he may determine the how of his therapeutic attack.

During the past few years, evidence has been accumulating in support of the acid factor, which, it has been found, may not only play a part in initiating ulcerations of the duodenum and stomach but, of greater importance, may prevent healing and hence lead to chronicity and to the two major complications of ulcer; that is, hemorrhage and perforation. The acid factor, it is true, has long been mentioned, in fact, ever since it was first noticed that patients with ulcer are apt to have a high titratable acidity in their gastric contents. Its importance, however, has only recently become apparent, for much evidence has been accumulating to show that it may be the prime factor in the pathogenesis of ulcer. This evidence is of various kinds. Spontaneous digestion of living tissue by pure gastric juice, for example, can be demonstrated¹ *in vitro*, provided only the acidity is high enough (above 0.15 per cent of hydrochloric acid). Though the acidity of normal gastric contents is usually below this level, acidity values much higher are not infrequent in patients with ulcer and with severe "hyperacidity."

Experiments *in vivo* also are successful in demonstrating at least local digestion, provided the natural tendency of gastric juice to become neutralized is prevented. If, in any way, gastric juice of a high acidity is allowed to pass over intestinal mucosa, a peptic ulcer develops at the point where the active juice first strikes the adjacent tissue. Thus, if neutralization is prevented by diverting the alkaline secretions of the duodenum, gastric juice becomes highly acid² and will form an ulcer just beyond the exit of the stomach.³ The ulcer heals when the alkaline secretions are restored.⁴ A spontaneous ulcer will form beyond the exit of an isolated stomach pouch from which a highly acid juice is flowing.⁵ When gastric mucosa is found in Meckel's diverticulum, a peptic ulcer may form in the ileac mucosa next to it. The digestion frequently erodes a blood vessel and results in hemorrhage and

in some cases may even go on and cause an actual perforation.⁶ A summary of many of these observations as well as new observations of similar nature of their own can be found in a recent paper by Matthews and Dragstedt.⁷ Older evidence also illustrates the importance of the acid factor. Thus, it is an often acknowledged observation that operations for peptic ulcer which achieve a postoperative anacidity are most apt to succeed and lead to healing. Patients with active duodenal ulcer always have acid in the gastric juice; moreover, neutralization of the gastric free acidity in these cases favors the healing process. Anacidity, which occurs in 12 per cent of normal adults, never occurs in those with duodenal ulcer.⁸ These observations, a few among many others of similar nature, direct attention anew to the importance of gastric acidity, to the factors that determine whether it is high or low, and to the means of bringing it within clinical control.

Gastric acidity is not simply determined by the secretory activity of the stomach alone, as is generally believed, for actively secreted gastric juice always has a high value.⁹ To know what determines the final acidity of gastric juice, one should know what neutralizes the acid, once secreted, to the level, low or high, that is found clinically. This neutralizing mechanism, when faulty, leaves the gastric contents high in acid; when effective, it results in a low acidity or even in a complete anacidity. Two explanations are offered of this neutralizing mechanism: one, that gastric acidity is governed (neutralized) by factors intrinsic in the stomach itself, such as a diluting fluid or mucus; the other, that duodenal contents, notably the alkaline pancreatic juice by reflux into the stomach, is the important mechanism. Research at present is concerning itself with this problem, and already much evidence has been reported. Alkali by mouth may relieve symptoms by neutralizing for a time the high gastric acidity, but it effects merely a result and does not reach the cause of the disease. Perforation and hemorrhage, moreover, have been known to occur in spite of such treatment. A gastro-enterostomy, however, does in some still inadequately explained manner relieve symptoms in most cases. As long as the mechanism is unestablished, failures will continue to develop; failures, that is, not only in the relief of symptoms but, much worse, with the occasional development of a new ulcer at the operative stoma. As soon as it becomes possible to control gastric acidity, physicians will probably know how to influence the acid factor under pathologic conditions. On this basis a rational cure, medical, surgical or both, will be possible.

1. Dragstedt, L. R., and Matthews, W. B.: The Digestion of Living Tissues by Gastric and Pancreatic Juice, *Am. J. Physiol.* **105**: 29, 1933.

2. Steinberg, M. E.; Brougher, J. C., and Vidgoff, I. J.: Changes in Chemistry of the Contents of Stomach Following Gastric Operations, *Arch. Surg.* **15**: 749 (Nov.) 1927.

3. Mann, F. C., and Williamson, C. S.: The Experimental Production of Peptic Ulcer, *Ann. Surg.* **77**: 409 (April) 1923. Elman, Robert, and Hartmann, A. F.: Spontaneous Peptic Ulcers of Duodenum After Continued Loss of Total Pancreatic Juice, *Arch. Surg.* **23**: 1030 (Dec.) 1931.

4. Mann, F. C.: Hodgen Lecture, Observations on Experimentally Produced Peptic Ulcer, *Bull. St. Louis M. Soc.* **27**: 377, 1933.

5. Matthews, W. B.: Production of Intestinal Ulcers by Active Gastric Juice, *Proc. Soc. Exper. Biol. & Med.* **28**: 960 (June) 1931.

6. Mason, J. M., and Graham, G. S.: Ulceration of Aberrant Gastric Mucosa in Meckel's Diverticulum, *Ann. Surg.* **96**: 893 (Nov.) 1932.

7. Matthews, W. B., and Dragstedt, L. R.: Etiology of Gastric and Duodenal Ulcer, *Surg., Gynec. & Obst.* **55**: 265 (Sept.) 1932.

8. Palmer, W. L.: The Mechanism of Pain in Gastric and Duodenal Ulcers, *Arch. Int. Med.* **38**: 603 (Nov.) 1926; The Value of Acid Neutralization in the Treatment of Gastric and Duodenal Ulcers, *ibid.* **46**: 165 (Aug.) 1930; Studies on the Neutralization of the Gastric Acidity in the Treatment of Peptic Ulcer, *Tr. Am. Gastroenterol. A.*, 1932, p. 123.

9. Carlson, A. J.: A Note on the Chemistry of Normal Human Gastric Juice, *Am. J. Physiol.* **38**: 248, 1915.

Current Comment

STOP THE DUST

About forty years ago the late Dr. T. Mitchell Prudden published a small volume entitled "Dust and Its Dangers." The book was one of the pioneer efforts in this country to direct attention to the distribution of the ubiquitous bacteria, then only recently known as important unseen enemies of man. The menace of dust was presented as the danger of dissemination of baneful micro-organisms. If a contribution should be offered today under the same title it would stress additional and quite different features of harm. One cannot read the symposium of contributions on silicosis and other forms of pneumoconiosis presented in a recent issue of *THE JOURNAL*¹ without realizing more fully how threatening the injurious effects produced in the lungs by the inhalation of unusual quantities of certain dusts have become. Aside from the possible development of fibroses there is the specter of the predisposition to infections such as pneumonia and pulmonary tuberculosis. There are cogent reasons why the dangers have become widespread. Next to oxygen, silicon is the most common element of the earth's crust. Free silica represents nearly 13 per cent, and in combined form the proportion present amounts to more than 42 per cent. There are admittedly many difficulties in the accurate diagnosis of the varied forms of pneumoconiosis. These are being masked by such efforts as were reported in detail at the Milwaukee session of the American Medical Association. The diagnosis calls for a correlation of all the facts: symptoms, signs, occupational history, and laboratory and roentgen examinations. The normal lung contains scarcely more than 1 mg. of silicon dioxide per gram of dried tissue, whereas the lung tissues of persons exposed to dusty atmospheres of certain types may exhibit many times that amount. That is why, according to McNally,² a chemical examination of the lungs should be made in every case coming to necropsy in which there is a history of a dusty occupation. Silicosis is particularly menacing, whereas some of the organic dusts are less pathogenic. Pancoast² struck the proper keynote when he remarked that the great difficulty in this country with silicosis is the law and not the medical profession. We as physicians are a little lax because of a lack of thorough knowledge about it, but certainly our form of government is more at fault. We have to depend on every state passing some kind of compensation law for silicosis. The states have been slow in doing this; moreover, each one passes a different law, which upsets industry and brings about confusion. In more than one industry today the most important slogan in the "new deal," from the standpoint of welfare defined in terms of human health and comfort, would be Stop the Dust.

1. Sayers, R. R.: *The Clinical Aspects of Silicosis*, J. A. M. A. 101: 580 (Aug. 19) 1933.
p. 583. McNally, W. D.: *Silicosis and Its Complications in Health and Disease*, p. 584. Pancoast
genologic Aspect of Pneumoconiosis and Its Differential Diagnosis,
p. 587. Gardner, L. U.: *The Pathologic Reaction in Various Pneumoconioses*, p. 594.
2. Pancoast, H. K., in discussion on silicosis, J. A. M. A. 101: 593 (Aug. 19) 1933.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., Chicago daylight saving time, which is one hour faster than central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

Sept. 12. Hobbies.
Sept. 14. Arthritis.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

Sept. 16. Minerals in the Diet.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Library Building for County Society.—The Los Angeles County Medical Association has announced its decision to start immediate construction of a library building and auditorium. The building, to be financed by an accumulated "permanent quarters fund" of about \$300,000, will provide space for about 140,000 volumes, while the auditorium will have a seating capacity of more than 325. Last year the Barlow Library Medical Association presented the library to the county medical association on the latter's agreement that a building would be erected. The library will be transferred to the new structure on its completion, which is expected by the first of next year.

Eye Swindlers Active Again.—Two "eminent opticians said to be from Colorado Springs," who called themselves "Drs." John J. Harris and W. O. Wilson, recently received \$112 in cash for "treatment" of a woman's eyes, in Santa Barbara. The impostors called on the woman after her return from a visit to her optician. The men refused a check for the "treatment" and succeeded in having the "patient" accompany them to the bank, where she gave them \$112 in cash. Previous reports in *THE JOURNAL* describe the similar swindling activities of two men, one a "Dr. Harris," in Reading, Pa., and Huntsville, Ala.

COLORADO

Nursing School Closed.—The University of Colorado School of Medicine closed its nursing school, June 15, for reasons of economy. The school had a faculty of twenty-two, exclusive of head nurses. It was established in 1898 and was suspended in June, 1922, but resumed operation in 1924. Students now in training will be allowed to complete their courses.

University News.—Dr. George S. Johnson, assistant director, Colorado Psychopathic Hospital, University of Colorado, has been appointed a professor of neuropsychiatry at Stanford University School of Medicine, effective September 1. Dr. Charles A. Rymer, resident psychiatrist at the hospital, has been appointed to succeed Dr. Johnson. Dr. Franklin G. Ebaugh, director of the hospital, will spend part of the next academic year as director of the division of psychiatric education of the National Committee for Mental Hygiene.

DELAWARE

Midwives in Delaware.—Of 4,282 live births reported in Delaware in 1932, 19.2 per cent were attended by midwives and 80.4 per cent by physicians. There are 157 midwives registered and practicing in Delaware, 51 white and 106 colored. Fifty-nine are practicing in New Castle and Wilmington, forty-five in Kent County and fifty-three in Sussex County. All midwives are under the supervision of the state board of health and are allowed to apply for a license only on the recommendation of a physician.

ILLINOIS

Personal.—Dr. Joseph A. Campbell, Marissa, has been appointed managing officer of the East Moline State Hospital, East Moline, succeeding Dr. Cyrus H. Anderson.

Chicago

Personal.—Dr. David C. Straus has been appointed consultant in fractures and traumatic surgery in the recently created medical department of the Illinois Industrial Commission.—Dr. Frank S. Needham, Oak Park, is the first winner of the Vanderslice Cup of the Chicago Medical Society. The golf tournament was held at the Medinah Country Club, August 9. Dr. Needham's gross score was 80.

Gift for the Advancement of Urology.—Securities with a market value in excess of \$300,000 have been transferred to Northwestern University Medical School by an anonymous donor, to be used for the advancement and improvement of the teaching of urology. The trustees have the right to invest this money and allocate the income to the designated purpose whenever it is considered sufficient to inaugurate a productive program.

IOWA

Dinner to Dr. Taylor.—The Wapello County Medical Society will be host to members of the Ninth Councilor District and other invited guests at a complimentary dinner at the Wapello Club, Ottumwa, September 19, in honor of Dr. Charles B. Taylor, Ottumwa, president of the Iowa State Medical Society. Dr. Oliver J. Fay, Des Moines, will act as toastmaster, and speakers will include Drs. Daniel J. Glomset and John H. Peck, Des Moines; Fred M. Smith, Iowa City; Royal F. French, Marshalltown, and Murdock Bannister, Ottumwa.

Twin Lakes District Meeting.—Dr. James McAllister, Odebolt, was elected president of the Twin Lakes District Medical Society at its eleventh annual assembly at Burns' Alhambra Pavilion, near Rockwell City, July 13, and Dr. Paul W. Van Metre, Rockwell City, was reelected secretary. Speakers included Drs. David M. Berkman, Rochester, Minn., who gave an address entitled "Quo Vadis, Medico?" and Milford E. Barnes, Iowa City, "Public Milk Supply and the Public Health." Clinics were conducted by Drs. Howard L. Beye, Iowa City, in general surgery; Arthur Steindler, Iowa City, orthopedic surgery, and Fred M. Smith, Iowa City, medicine.

KENTUCKY

Personal.—Sir Wilfred Thomason Grenfell delivered the commencement address at the ninety-sixth commencement of the University of Louisville, June 6; the honorary degree of doctor of science was conferred on him by the university.

Society News.—Drs. George A. Hendon and Philip F. Barbour, Louisville, presented a series of lectures at Cynthiana, July 27, sponsored by the Harrison County Medical Society. Subjects covered by Dr. Hendon included treatment of peptic ulcer, fracture of the hip, hernia and intestinal obstruction; by Dr. Barbour, eczema, asthma, rheumatism and communicable diseases.—Drs. Thomas M. and Samuel B. Marks, Lexington, addressed the Bourbon County Medical Society, Paris, July 20, on "Meningococcus Meningitis" and "Acute Laryngo-tracheal Bronchitis in Children," respectively.—Members of the Marion, Taylor, Green and Adair county medical societies met in Columbia, July 21; speakers were Drs. William O. Johnson and Frank P. Strickler, Louisville, on "Diagnosis and Treatment of Borderline Hyperthyroidism" and "Surgery of the Common Ducts," respectively.—Dr. William R. Miner, Covington, addressed the Grant County Medical Society, Williamstown, in June on hydronephrosis.—Speakers before the Third District Medical Society in Hopkinsville, June 21, were Dr. Paul S. York, Glasgow, on "Meningovascular Syphilis" and Drs. Frank M. and James R. Stites, Louisville, on "Medical Preparation for Urological Surgery" and "Surgical Care of Urological Patients," respectively.

LOUISIANA

New Appointments to Medical Board.—Drs. George S. Bel, New Orleans, and Jackson J. Ayo, Raceland, were recently appointed to the Louisiana State Board of Medical Examiners, replacing Drs. Leon J. Menville, New Orleans, and James E. Knighton, Shreveport. The personnel of the present board is as follows: president, Dr. Bel; vice president, Dr. Robert W. O'Donnell, Monroe; Dr. Roy B. Harrison, New Orleans, secretary-treasurer; Dr. Edmund L. Leckert, New Orleans, and Dr. Ayo.

MAINE

Society News.—The Somerset County Medical Association was addressed, June 15, at Lakewood by Drs. George E. Young, Skowhegan, and Paul Wakefield, Fairfield, on tuberculosis.—The Tri-County Medical Society (Penobscot, Piscataquis and Somerset) was addressed, August 18, by Dr. Donald S. King, Boston, on "Developments in Treatment of Thoracic Diseases." Dr. Edwin T. Wyman, Boston, also spoke.

MICHIGAN

Peninsula Society Election.—Dr. John J. Walch, Escanaba, was elected president of the Upper Peninsula Medical Society, August 11, and Dr. Frank G. Maloney, Ironwood, was named vice president. Selection of Ironwood as the place for the next annual convention makes the secretary of the Gogebic County Medical Society automatically secretary of the peninsula society, it was stated.

Director of Tuberculosis Work Appointed.—Dr. Bruce H. Douglas, for several years medical director and superintendent of the William H. Maybury Sanatorium, Northville, has been designated director of tuberculosis work for the Detroit Board of Health. Dr. Douglas will succeed Dr. Henry D. Chadwick, who has been appointed commissioner of health of Massachusetts, effective October 1. He is a 1921 graduate of Rush Medical College and has been associated with the Maybury Sanatorium since 1923.

MISSISSIPPI

Low Death Rate.—There were 20,322 deaths recorded in 1932 in Mississippi, giving a rate of 9.9, the lowest ever recorded in the state per thousand of population. The total number of births in 1932 was 46,481 and the rate per thousand 22.6.

Personal.—Dr. Sanchez-Vigil, inspector general of sanitation, Nicaragua, Central America, is spending three and one-half months in Mississippi to study the laboratory and county health work of the state board of health. Following his study there, he plans to go to Johns Hopkins School of Hygiene and Public Health, Baltimore, to work toward a master's degree in public health. Ming-Ting Young of the National Health Administration, Nanking, China, spent two weeks, recently, with the state board of health, observing the sanitary engineering activities.

MISSOURI

The St. Louis Encephalitis Epidemic.—Fatalities in the outbreak of encephalitis in St. Louis totaled seventy-one, September 4, while the number of reported patients was more than 480, newspapers stated. Ninety patients were under treatment at the isolation hospital on that date. A new ward to care for these patients has been opened at the hospital, with accommodations for fifty persons.

Faculty Changes at St. Louis University.—Dr. William H. Vogt, associate professor of gynecology and obstetrics at St. Louis University School of Medicine, has been made professor and director of the department. Drs. Edgar F. Schmitz and Edward Lee Dorsett, both of whom were formerly on the faculty, have been appointed associate professor of gynecology and obstetrics and assistant professor of gynecology, respectively. Dr. Solomon A. Weintraub has been promoted to assistant professor in this department. It was also announced that Dr. Leland B. Alford has been promoted to the rank of associate professor of neurology and psychiatry.

NEW HAMPSHIRE

Use of Pasteurized Milk Required.—The state board of health has recently issued a regulation requiring that all milk and cream used in the manufacture of ice cream for sale to the public must have been subjected to the standard process of pasteurization.

Deaths from Tuberculosis Reduced.—Deaths from tuberculosis in New Hampshire were reduced from 241 in 1931 to 206 in 1932, the lowest number ever reported in the state. The death rate per 10,000 of population was 3.74. Of the total number, 176 were from tuberculosis of the respiratory system.

NEW JERSEY

Infantile Paralysis in Bergen County.—School and health authorities decided to postpone the opening of the Fairmont School in Hackensack until September 14 because of an outbreak of infantile paralysis. About ten cases have been reported in the city, one fatal case in the Fairmont section of the city.

Society News.—The Society for the Relief of the Widows and Orphans of Medical Men of New Jersey paid out \$5,000

in benefits during the year ended May 1, according to the recent annual report. The society, incorporated in 1882, collects assessments from each member when a member dies. Three fourths of the amount is sent immediately to the survivors and the remainder is placed in a permanent fund, which is used for relief of physicians' widows and orphans who are in need. Dr. Edward J. Ill, Newark, is president of the society.

NEW MEXICO

Personal.—Dr. Cranford H. Douthirt, recently health officer of Union County, has been appointed director of county health work in the state bureau of public health.

Society News.—Dr. Wallace P. Martin addressed the Curry County Medical Society, Clovis, at the final meeting for the season in June, on tumors of the bone.—Approximately 100 persons in Rincon recently received inoculations against typhoid after a flood swept through the village. Forty persons were made homeless by the flood.

NEW YORK

Society News.—Dr. Edward M. Livingston, New York, addressed the annual meeting of the third district branch of the Medical Society of the State of New York, September 5, at Catskill, on "Interpretation of Abdominal Signs and Symptoms: A Practical Study of Visceral Neurology."—Dr. Louis C. Kress, Buffalo, addressed the Medical Society of the County of Rockland, June 28, at Stony Point, on "Five-Year Cures in Cancer."

New York City

Curb Sale of Valerian.—At the request of the police department, the board of health has instituted strict control measures over the sale of valerian or valerianate and all its derivatives in order to curb its use by gangsters and racketeers in stench bombs. No person other than a physician, a veterinarian or a pharmacist is permitted to sell the drug in the city, and only on prescription. Manufacturers are required to state the specific amount of the drug in each container or package of the drug or any proprietary medicine in which it is used. Both manufacturers and dispensing pharmacists must keep a complete record of all valerian or valerianate or any of its derivatives that pass through their hands.

Health Demonstration Six Years Old.—The Bellevue-Yorkville Health Demonstration, directed by the department of health and financed by the Milbank Memorial Fund, recently completed its sixth year. The annual report lists the projects established in that section, many of which have been since installed in other sections of the city. Among them are clinics for the preschool child, consultation chest service for private physicians, pneumothorax refill service, generalized nursing service, diagnostic cardiac clinics for children applying for work permits, and a mental hygiene service. Forty-four thousand families live in the Bellevue-Yorkville district. Dr. Margaret Witter Barnard is medical director of the demonstration.

University News.—New courses in roentgenology and radiation therapy will be given at New York Post-Graduate Medical School and Hospital during the coming academic year. The courses have been graded so that physicians may undertake from three to nine months of intensive progressive work. The first three months will be devoted to basic work, the second to clinical experience and the last to radiation therapy. Application is limited to graduate physicians in good standing either with internship in an approved hospital or with five years' active general practice with hospital and clinic experience. The maximum number of applicants accepted will be eight. Fees for the three divisions will be \$250 each, or \$700 for the nine months.

Less Noise in the Subway.—Engineers of the Interborough Rapid Transit Company have constructed a car in which the usual noise of the subway has been reduced from a level of about 95 decibels to about 75 decibels. They explain that the new level is about as quiet as the ordinary Pullman car, while that of the ordinary subway is equal to the noise of Niagara Falls at the closest point a visitor can reach. In the new car the windows are kept closed and all cracks are sealed. Forced ventilation is provided by power blowers, the air ducts being treated to prevent passage of noise through them. Dr. Shirley Wynne, commissioner of health, stated that the reduction of noise in the subway should lessen the nervous strain and other mental and physical ills believed to be caused by continual loud noise.

Private Physicians and Examinations of School Children.—The coordinating committee of the five county medical societies of the city of New York at a recent meeting agreed that it was desirable to stimulate action by the health depart-

ment, the board of education and the medical profession on examination of children about to enter school for the first time, as required by the sanitary code. After conference with the health department it was decided that each society should urge private physicians to make the examinations. In other years a special form has been furnished by the department for physicians to send to parents suggesting the examination, but since budgetary restrictions have now made this impossible the committee suggested that the form be locally printed in each county.

Lectures on Psychoanalysis.—A course of eleven lectures for physicians on "Psychoanalysis in Medicine" will be presented at the New York Psychoanalytic Institute beginning October 5 and continuing on Thursdays except November 30. The lectures are as follows:

Dr. Clarence P. Oberndorf, History and Scope of Psychoanalysis; Psychopathology of Everyday Life; Sexual Theory.
Dr. Monroe A. Meyer, Interpretation of Dreams—Symbolism; General Theory of the Neuroses.
Dr. Dorian Feigenbaum, Conversion Hysteria.
Dr. Sandor Lotand, Anxiety Hysteria.
Dr. Philip R. Lehrman, The Compulsion Neurosis.
Dr. Gregory Zilboorg, Manic-Depressive Psychoses; Schizophrenic Psychoses; Psychoanalysis and Organic Disease.

Physicians may register with Dr. Monroe A. Meyer, New York Psychoanalytic Institute, 324 West Eighty-Sixth Street. The fee is \$10.

NORTH CAROLINA

Course in Public Health.—The University of North Carolina will offer a short course in public health during the first quarter of the coming year, it was recently announced. The schools of medicine, public administration and engineering and the graduate school will cooperate in arranging the course, which will be designed to meet practical needs of health officers and physicians who wish to enter public health work.

OHIO

Personal.—Dr. Frank G. Boudreau, formerly chief of the division of communicable diseases of the state department of health, has recently been made acting chief of the Health Section of the League of Nations to serve during the absence of Dr. Ludwig Rajckman, head of the section, on an extended stay in China. Dr. Boudreau left the state health department in 1925 to join the staff of the health section as statistician-epidemiologist.

Hospital News.—St. Joseph's Hospital, Lorain, will close its nursing school after thirty years of service. Undergraduates will be transferred to St. Elizabeth's in Youngstown. —Lima Memorial Hospital, Lima, a \$550,000 structure with a capacity of 144 beds, was opened, May 30. Funds were provided by a bond issue of \$600,000 authorized ten years ago. —The Champaign County health office was recently closed for lack of operating funds. Dr. Lemuel A. Woodburn, Urbana, has been commissioner for five years.

Fellowships Awarded.—Western Reserve University School of Medicine recently announced the award of the Crile Foundation Fellowships, established several years ago by Dr. George W. Crile, professor emeritus of surgery, to enable promising students to do research during vacation months. The following students received fellowships in the departments indicated:

George H. Gerlach, pharmacology.	Harry Edward King, biochemistry.
George Robert Krause, anatomy.	Donald Alanson Kelly, pathology.
Harold Victor Morley, anatomy.	Robert D. Mansfield, pathology.
Theodore S. Rosen, anatomy.	Irvine H. Marshall, pharmacology.
William F. Ashe, Jr., biochemistry.	Aladar Edgar Mako, histology.
Genevieve Delfs, anatomy.	Mary Ruth Oldt, pathology.
Ben Fisher, hygiene.	Kenton R. Phelps, physiology.
Sarah Mathiott Hindman, hygiene.	Eugene J. Stanton, pharmacology.

SOUTH DAKOTA

Dr. Jenkins Reappointed.—Dr. Park B. Jenkins, Waubay, has been reappointed superintendent of the South Dakota State Board of Health for a term of five years. Because of reduced appropriations the services of Dr. August E. Bostrom, De Smet, who had been state epidemiologist since July 1, 1929, were discontinued.

TENNESSEE

Personal.—Drs. Waller S. Leathers and Owen H. Wilson, Nashville, and Edward Clay Mitchell, Memphis, have been appointed to the state public health council. Other members are Drs. Lloyd M. Graves, Memphis, and Thomas B. Yancey, Kingsport. —Dr. Harold M. Kelso, Gallatin, has been appointed health officer of Sumner County to succeed Dr. Geoffrey M. Morris.

Society News.—Dr. Burton L. Jacobs, Chattanooga, addressed the first fall meeting of the Hamilton County Medical Society, September 7, on "Postoperative Thrombophlebitis and Embolism."—Drs. Owen H. Williams, Savannah, and Jacob Alperin, Memphis, among others, addressed the Hardin-Lawrence-Lewis-Perry-Wayne Counties Medical Society, July 25, on "Neurotic Habits in Infancy and Childhood" and "Diabetes Mellitus," respectively.—Dr. John L. Hankins, Johnson City, spoke on roentgen therapy and Drs. Harry D. Miller and John G. Moss, Johnson City, on the clinical use of radium at the meeting of the Washington County Medical Society, September 7.

VIRGINIA

Hospital News.—The Winchester Memorial Hospital has announced that its nursing school is to be discontinued this month. The school has been maintained for thirty years.

University News.—Mr. Paul Goodloe McIntire, Charlottesville, Va., has given to the University of Virginia School of Medicine \$75,000 for the study and treatment of mental diseases and \$100,000 for the study of cancer, the latter as a memorial to his wife.

Personal.—Dr. Wyndham B. Blanton, Richmond, received the honorary degree of doctor of literature from Hampden-Sidney College, in recognition of his work on the "History of Medicine in Virginia."—Dr. Mildred Esther Scott, Kansas City, Kan., has been appointed physician to the State Teachers College, Fredericksburg.

Changes at Medical College of Virginia.—Dr. Jesse L. McElroy, superintendent of the hospital division of the Medical College of Virginia since 1929, has resigned to become superintendent of the American Hospital in Paris. Dr. Lewis E. Jarrett, senior assistant superintendent, has been named to succeed Dr. McElroy. Promotions among the faculty include the following:

Dr. Daniel D. Talley, Jr., to professor of roentgenology to succeed the late Dr. Alfred L. Gray.
Dr. William R. Bond to professor of physiology.
Dr. Harvey B. Haag to professor of pharmacology.
Dr. Robert H. Courtney to associate professor of ophthalmology.
Dr. Wyndham B. Blanton to professor of the history of medicine.

WEST VIRGINIA

New Plan for Mental Hospitals.—The West Virginia State Medical Association is working out a plan with the governor and the state board of control to reorganize care of the mentally ill in state hospitals. It is planned to have a trained staff of psychiatrists and internists at one of the hospitals and to use the other two hospitals as custodial institutions for incurable patients. It is also proposed that medical appointments under state control be placed under civil service.

Recent Appointments.—Dr. Russell H. Paden, former director of the division of child hygiene of the state department of health, has been appointed superintendent of the State Home for Backward Children, St. Marys. Governor Kump has appointed Dr. John E. McQuain, Parkersburg, superintendent of the Spencer State Hospital at Spencer, succeeding Dr. Barlick S. Rankin. Dr. W. H. Post, Masontown, has been appointed superintendent of the Hopemont Tuberculosis Sanitarium to succeed Dr. George F. Evans. Dr. Albert M. Price, Madison, has been appointed director of the division of rural sanitation of the state health department, it is reported.

GENERAL

Increase in Quota of Medicinal Liquor.—The bureau of internal revenue has authorized the manufacture of 7,000,000 gallons of medicinal liquor during the coming year. This is three and one-half times the amount permitted each year since 1929. The present supply was estimated at 11,000,000 gallons.

News of Epidemics.—Thirty-three cases of typhoid with five deaths have occurred among nuns in a convent in Montreal, Que., newspapers reported, August 24. The source of the epidemic had not been determined.—The Civilian Conservation Corps unit near Loudonville, Ohio, was quarantined, August 18, for scarlet fever. One definite case developed and six other members of the corps were isolated for observation.—Fourteen cases of infantile paralysis were reported in Fayette County, Pa., between July 22 and August 18.

Unauthorized Salesmen.—Complaints have been received at the headquarters of the American Medical Association concerning salesmen who claim to represent the so-called "A. M. A. Sales Company, N. Dearborn St., Chicago, Ill." Mail bearing this address has been delivered to the American Medical Association, postal authorities apparently being unable to locate a firm by the name given. An order blank sent by a physician from Texas shows a subscription offer for three magazines

for \$10, of which \$5 was to be paid with the order and \$5 within sixty days. The man who visited him was 5 feet 11 inches tall; weight about 170 pounds; brunette with slightly curly hair; close shaven; dark eyes; about 35 to 40 years old. Accredited representatives of the American Medical Association carry credentials signed by Dr. Olin West, Secretary and General Manager. Physicians are warned not to accept any person as a representative of the association unless he presents this identification.

Pedlers of Jamaica Ginger Convicted.—Three pedlers of the Jamaica ginger that caused an outbreak of paralysis in Los Angeles early in 1931 were recently convicted by the government. Two were sentenced to pay fines of \$2,500 each and serve twenty months in jail and the other to spend seventeen months in prison. All were charged with conspiracy to violate the federal Food and Drugs Act and convicted in the federal court of Brooklyn, Dec. 30, 1932. They appealed the case and were released under \$10,000 bonds, but the U. S. Circuit Court of Appeals affirmed the conviction. The Food and Drug Administration investigated operations of the racketeers for more than two years before sufficient evidence was collected to identify the persons responsible for shipping poisonous "fluid extract of ginger" in interstate commerce. For the most part the extract was taken as an intoxicant, though some persons took it allegedly for medicine. Barrels of the poison were labeled "fluid medicine." In a previous prosecution one member of a firm in Boston which was said to have shipped ginger extract that caused an epidemic in 1930 received a prison term and the concern was fined \$1,000.

Bequests and Donations.—The following bequests and donations have recently been announced:

St. Vincent's Hospital, New York, and the Hawthorne (N. Y.) hospital of the Sisters for Relief of Incurable Cancer, \$2,000 each under the will of the late Rose C. Newman.

New Rochelle (N. Y.) Hospital and the Hospital of the Sisters for Relief of Incurable Cancer at Hawthorne, \$5,000 each under the will of the late James R. Merrill.

Presbyterian Hospital, New York, \$7,500, and New York Orthopedic Dispensary and Hospital, \$2,500 by the will of the late Mrs. Bertha H. Minturn.

St. Luke's, New York Foundling and Seton hospitals and New York Society for the Relief of the Ruptured and Crippled, all of New York, and St. Joseph's Hospital, Yonkers, \$10,000 each by the will of the late Giulia P. Morosini.

New Haven Hospital, New Haven, Conn., \$100,000 from the estate of Miss Jeannie Taylor Kingsley.

Milford Hospital, Milford, Mass., \$10,000 by the will of Mrs. Helen Draper Ayer.

Presbyterian and New York hospitals, New York; Grace and Receiving hospitals, Detroit, \$187,814 each by the will of Stewart Hill Jones. Harlem Eye and Ear Hospital, \$25,000, and St. Luke's Hospital, New York, \$15,000 by the will of the late William T. Koch.

Grasslands Hospital, Valhalla, \$50,000 bequeathed by the late Charles Eddy Monroe.

New York Hospital, \$5,000 under the will of the late Miss Helen Jay Garretson.

Medical Papers on Chemists' Program.—Among papers of medical interest on the program of the meeting of the American Chemical Society in Chicago, September 10-15, will be the following:

Henry C. Sherman, Ph.D., New York, A Century of Progress in the Chemistry of Nutrition.

W. Fred Oberst, Ph.D., and Dr. Everett D. Plass, Iowa City, Variations in the Hydrogen Ion Concentration of Human Vaginal Discharge.

Martin E. Hanke, Ph.D., Chicago, Acid Base Metabolism of the Stomach and Pancreas.

George L. Clark, Ph.D., Urbana, Ill., and Paul F. Ziegler, Chicago, X-Ray Diffraction Researches on Surgical Catgut Ligatures.

Edward A. Doisy, Ph.D., D. W. Maccorquodale, Ph.D., and Sidney A. Thayer, Ph.D., St. Louis, Estrogenic Activity of Some Oxidative Derivatives of Theelin and Theolol.

Dr. James B. Collip, L. I. Pugsley and Evelyn M. Anderson, Montreal, Effect of the Thyreotropic Hormone and of Desiccated Thyroid on the Creatine and Creatinine Excretion of the Rat.

Casmir Funk, Rueil-Malmaison, France, New Metabolic Hormones and the Nature of Intermediate Products formed in the Organism under Their Influence.

Dr. Richard Wilstätter, Munich, Germany, will receive the Willard Gibbs Medal of the Chicago Section, Wednesday evening, September 13. Dr. Wilstätter will give his technical address Thursday afternoon on "Recent Problems in the Nature of Enzymes."

CANADA

Personal.—Lieut.-Col. John Andrew Amyot, deputy minister of pensions and national health, has retired. Dr. Amyot was made deputy minister of health in 1919, after eighteen years' service as director of the provincial health department of Ontario, and when the department of pensions was combined with the federal health department in 1928 he became deputy minister of the joint department.

Society News.—Dr. Alphonse Lessard, director of the Bureau of Health and Public Charities of Quebec, was elected president of the Canadian Public Health Association at the annual meeting in St. John, New Brunswick, June 19-21. Vice

presidents are Drs. Frederick W. Jackson, Winnipeg; John G. Fitzgerald, Toronto, and John W. McIntosh, Vancouver.—Dr. John Sinclair McEachern, Calgary, Alta., was chosen president-elect of the Canadian Medical Association at the annual meeting at St. John, N. B., in June. Dr. George A. B. Addy, St. John, assumed the presidency, succeeding Dr. Alexander Primrose, Toronto. The 1934 annual session will be held in Calgary in June.—Dr. W. S. Turnbull, Vancouver, was elected president of the British Columbia Medical Association, and Dr. Ethlyn Trapp, New Westminster, secretary, at the recent annual meeting.—Dr. Tanemoto Furuhashi, professor of legal medicine, Kanazawa University of Medicine, Kanazawa, Japan, addressed the Vancouver Medical Association, June 8, on "Heredity of Blood Groups and Its Application to Forensic Medicine."—Dr. Robert Muir, Glasgow, Scotland, was the guest of honor at a special dinner meeting of the Halifax branch of the Medical Society of Nova Scotia, July 5, speaking on cancer.

Chiropractor Forbidden to Use "Doctor" in Title.—The use of the term "doctor" by a chiropractor is a violation of the medical law of Quebec, a justice of the superior court decided in a recent test case to determine the rights of chiropractors in the province. According to the *Montreal Gazette*, the decision brought to a head a long fight between physicians and those who practice in ways not considered competent by the medical profession. J. E. Lesage, the chiropractor in the case, was sentenced to pay a fine of \$200 or go to jail for sixty days for having described himself as a "doctor of chiropractic." The case was appealed. The justice discounted the argument of the defendant that he did not practice medicine because doctors of medicine do not recognize chiropractic methods, declaring that the law forbids all persons to care for the sick unless they are doctors of medicine. In answer to another argument that, since diagnosis is the essence of practice and since the chiropractor does not diagnose, he therefore does not practice medicine, the justice said:

The chiropractor, it is true, does not diagnose for each of the clients on whom, or against whom—I do not know which word is more exact—he applies his methods, but the reason is the whole of humanity suffers from the same evil, deviation of the vertebrae, which is the cause of disease of each one is already made.

FOREIGN

Surgical Clinic to Be Reopened.—The University Surgical Clinic in Berlin, Ziegelstrasse, of which Professor Bier was the last director and which was closed some time ago (*THE JOURNAL*, Nov. 28, 1931, p. 1640), only a restricted polyclinical service being preserved, is, according to a decision of the new government, to be reopened. The names proposed by the university medical faculty for the new chair are: (1) M. Kirschner, Tübingen; (2) V. Schmieden, Frankfurt-on-Main, and (3) H. von Haberer, Cologne.

Exhibit of Hobbies.—A feature of the annual session of the British Medical Association in Dublin was an exhibit of hobbies of Irish physicians, arranged by Dr. F. S. Bourke and displayed in Trinity College. There were 251 exhibits by fifty-one exhibitors. The largest number of exhibitors had collected Irish antiques, the *British Medical Journal* reports. Some had gathered up stone axes, flint arrowheads and other evidences of prehistoric civilization in Ireland, others displayed collections of utensils and implements used in primitive folk life and still others old coins and medals. There were sporting trophies and souvenirs of war, the latter including many articles made from shells, bullets and cartridges. The exhibition also included art work by various physicians, collections of books and a notable mezzotint portrait of Robert Adair, an eighteenth century Dublin surgeon said to have been the original of the song "Robin Adair."

Loud Auto Horns Prohibited in Paris.—The prefect of police of Paris, France, has forbidden all other instruments of noise on automobiles except a horn of low pitch and a single note. According to the *Chicago Tribune*, this was in consideration of a letter to the police department from an official of the Society for the Suppression of Noise, which read as follows:

Experience has demonstrated that horn blowing is rarely, if ever, necessary at all in the city and that mechanical and loud horns should be totally suppressed. Any motorist who attempts to cross an intersecting thoroughfare at full speed, relying solely on his horn, risks a serious accident. If he slackens his pace and looks to right and left, surely the horn is superfluous.

We are convinced that nine times out of ten when a loud blast from an unseen vehicle is heard by the driver of a given vehicle, it is quite impossible for the latter to decide from which direction the warning has come. Yet fifty unoffending citizens have had their hearing outraged and their nerves lacerated for nothing.

The usual reason given for sounding the horn is the wish to pass another car. But when the car in front is already proceeding at sufficiently high speed, this racing propensity should be sternly discouraged in town streets, as a large percentage of accidents is due to this practice.

Government Services

Navy Officers Promoted to Rear Admiral

Capt. Middleton Stuart Elliott and Capt. James Chambers Pryor of the Navy Medical Corps have been promoted to the rank of rear admiral to fill vacancies resulting from the retirement of Rear Admiral Charles E. Riggs, former surgeon general, and Rear Admiral Arthur W. Dunbar, October 1. Captain Elliott, a member of the Naval Retiring Board and Board of Medical Examiners of the Navy Department, is a native of South Carolina and has served in command of naval hospitals in Washington, D. C., Mare Island, Calif., and Canacao, P. I. In 1927 he was assigned to the Puget Sound Navy Yard and in 1930 was made district medical officer of the eleventh district, San Diego. Captain Pryor, at present medical officer of the first district, Boston, is a Tennessean and has served at various times at the Naval Medical School and the Naval Hospital in Washington, D. C., the Norfolk Navy Yard, the Naval Hospital at Annapolis and as fleet surgeon and aid on the staff of the commander of the United States fleet.

Change of Station in the Navy

Comdr. George C. Rhoades, from naval air station, Norfolk, Va., to U. S. S. *Ranger*.
Comdr. Paul T. Desser, from civilian conservation corps, to his home.
Comdr. Howard A. Tribou, from naval hospital, Boston, to Army Industrial College, Washington, D. C., as instructor.
Lieut. Comdr. Walter A. Fort, from thirteenth naval district to naval hospital, Mare Island, Calif.
Lieut. Norris M. Hardisty, from naval station, Guantanamo Bay, Cuba, to naval medical school, Washington, D. C., as instructor.
Lieut. Charles W. Shilling, from Harvard University School of Public Health, Cambridge, Mass., to navy yard, Washington, D. C.
Lieut. Clarence Minnema, resigned, from civilian conservation corps.
Lieut. Comdr. William F. Kennedy, from U. S. S. *Salt Lake City* to naval hospital, San Diego, Calif.
Lieut. Lloyd L. Edmisten, from naval hospital, Great Lakes, Ill., to naval hospital, San Diego.
Lieut. Ocie B. Morrison, Jr., from naval ordnance plant, South Charleston, W. Va., to naval station, Guantanamo Bay, Cuba.
Lieut. David H. Davis, from U. S. S. *Tutuila* to fourth regiment, U. S. Marines, China.
Lieut. Thenton D. Boaz, from fourth regiment, U. S. Marines, China, to U. S. S. *Tutuila*.

Army Personals

Lieut. Col. Harley J. Hallett, relieved at Fort Humphreys, Va., and assigned to the Hawaiian Department.
Major Gerald D. France, relieved at Fort Bliss, Texas, and assigned to the Hawaiian Department.
Majors Harold W. Kinderman and John G. Knauer, relieved at Walter Reed General Hospital, Washington, D. C., and assigned to Balboa Heights, Canal Zone.
Major Samuel D. Avery, relieved at Walter Reed General Hospital and assigned to the Philippine Department.
First Lieut. Lewis Barbako, having been examined for promotion and found physically disqualified for the duties of captain by reason of disability incident to the service, his retirement is announced.
First Lieut. Robert Purcell Rea (reserve) appointed with similar rank to medical corps, regular army.
Capt. William McFarland and Harry Greeno, having been found by an army retiring board incapacitated for active service on account of disability incident thereto, their retirement is announced.
Capt. Robert E. Bitner, relieved at Fort Riley and assigned to the Panama Canal Department.
Capt. William F. Coleman, Fort Leavenworth, Kansas, will proceed to his home and await retirement, for the convenience of the government.
Capt. Ray H. Skaggs, relieved at Walter Reed General Hospital, Washington, D. C., and assigned at Randolph Field, Texas.
Major William S. Prout, relieved at U. S. Military Academy, West Point, N. Y., and assigned to the Hawaiian Department.

Find Poisons Improperly Labeled

A recent survey of poisonous chemical compounds sold by dealers in the District of Columbia indicated that a large proportion of these substances now on sale do not comply with the federal caustic poison law, W. G. Campbell, chief of the Food and Drug Administration, announced. Early this year, inspectors of the administration visited dealers in the district and informed them as to the labeling requirement. Later official samples of caustic poisons were obtained from eighty-five dealers. Fifty-eight of these samples were either not labeled properly or carried no labels at all. Preliminary hearings are now being held in Washington which may lead to prosecution of some of the dealers for violations of the caustic poison act, Mr. Campbell said. Results of this survey suggest that dealers in other cities are probably selling poisons without labels showing their dangerous nature.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 21, 1933.

Breakdown of the National Health Insurance System

The socialist party in this country has one remedy for every ill—state expenditure. But that this produces more evil than it remedies they will not see, even when the country is brought to the brink of ruin, as it was by the socialist government. The prolonged unemployment, largely the result of their policy, has caused in some cases a breakdown of the system of contributions for the financing of the national health insurance system. Their remedy was easy: the state made good the deficiency. But after the financial crisis, which led to the downfall of the socialists, the new government decided to bring to an end this arrangement, which kept in the insurance system persons no longer qualified by contributions. It was provided that all insured persons who had been continuously unemployed for a period of two years and nine months would at the end of 1933 cease to be entitled to medical benefit. The government estimated that the number of persons so affected would be 100,000, but the continuance of the depression may well cause that figure to be exceeded. The insurance committees are deeply concerned and at their annual meeting it was pointed out that "these unfortunate people must in future rely upon the resources of public assistance." But in the distressed areas the resources for this purpose are already strained to the uttermost. The committees therefore suggest that the government should find the money or that the insurance funds might meet the cost by a small adjustment of the central fund. On the other hand, the government desires "to preserve the sanctity of the insurance principle." It may be pointed out that in any case "the insurance principle" is only partial, for normally a much greater part of the cost is provided by contributions from the government and the employers than from those who benefit by the system. As has been frequently pointed out, the so-called insurance system is more socialistic than anything else and, like all socialism, fails financially and makes constant demands on the state.

England and the German Persecution of Physicians

The organization of the Academic Assistance Council to assist teachers and investigators "who on grounds of religion, political opinion or race are unable to carry on work in their own country" has been reported in a previous letter. This formula brings out the fact that the German persecution is not directed against the Jews alone but against all persons of pacifist or liberal views. If there is one thing to which an Englishman is more attached than another, it is the liberty of the individual to think as he likes in all matters, and especially in religion and politics; and if there is one thing more hateful to him than another, it is the oppression of any individual or class because of opinions held. Hence a revolution has taken place in this country's attitude toward Germany. The war and, what is more important, the responsibility for the war, were being forgotten and sympathy was being aroused for the difficulties in which Germany found herself. Now this good will has been dissipated and a feeling of revulsion and distrust has taken its place. England has always been the refuge of people persecuted abroad for their religious or political views, and the desire to help the victims of persecution is as great as ever, but unfortunately the difficulties at the present time are also great. The country is struggling with an industrial depression unprecedented in living memory, and the medical profession is detrimentally affected. Means are being taken to enable teachers and investigators to continue their work in this country. British hospitals and medical schools are doing their best to enable

researches that have been interrupted to be continued. Perhaps the most eminent of the refugees is Dr. Fraenckel of Berlin, whose work on cancer has given him an international reputation. Westminster Hospital has placed its pathologic laboratory at his disposal, and he is doing research work there. But it is not easy to see how places can be found for practicing physicians. It is estimated that about 1,000 have arrived and that they continue to come at the rate of three or four a week. Many are enrolling in the universities or medical colleges to qualify for the right to practice in Great Britain or the dominions.

Radium Treatment of Malignant Disease of the Eye

In a prize essay published in the *British Journal of Ophthalmology*, H. B. Stallard reports the results obtained at St. Bartholomew's and Moorfields hospitals in the treatment of malignant disease of the eye by radium. In one case a child, aged 5 months, in 1925, had its left eye excised for glioma. In 1929 a glioma was found in the upper nasal quadrant of the right eye and on November 15 a radon seed of 3 millicurie strength was inserted into the growth through a scleral incision. By November 26 the whole growth had shrunk and the seed was removed. Later radon treatment was repeated because it was feared that recurrence had taken place and also high voltage roentgen therapy because intracranial extension was feared. In November, 1932, vision had improved and there were no signs of recurrence. The conclusion is drawn that the glioma was destroyed by the first operation and that the subsequent measures were unnecessary. In another case of bilateral glaucoma the second eye was treated with radon seeds, but the attached thread was brought through the conjunctiva instead of being buried beneath it and to this is attributed the disaster of panophthalmitis, which followed. In two other cases the eye had to be excised but there was pathologic evidence of arrest of growth.

Three cases of sarcoma of the choroid were treated with radium. In a man of 65 the growth shrank and three and one-half years later there was no evidence of extension or metastasis. In the other two the growth was partially destroyed but the eye had to be excised. In two cases of sarcoma of the iris, radium applied through the closed lids appeared to have reduced the size of the growth eighteen months later. In a second case it was unsuccessful and in a third the diagnosis was doubtful.

Stallard concludes that sarcoma of the uveal tract and glioma retinae can be destroyed by radium. The best method is interstitial insertion of the seed into the growth. Suturing of radon seeds to the sclera and other methods are less effective and likely to injure the eye. At the London Radium Institute, malignant epibulbar growths have given satisfactory results to unscreened radium contained in plates of monel metal. Four out of six cases of malignant growth of the orbit did well, but when the growth affects the bony walls success is rare. Radium treatment of diseases of the eye should not be lightly undertaken, for there is always the danger of producing cataract, corneal necrosis or panophthalmitis.

The Public Health

A continued improvement in the public health is shown in the report of the Ministry of Health for 1932-1933, just published. The death rate from tuberculosis is only 69 per thousand deaths from all causes, compared with 92 in 1923. The infant mortality is 65 per thousand births, compared with an average of 72 for the years 1921-1930.

THE UNDECLINING MATERNAL MORTALITY

But the maternal mortality remains obstinately high, though every effort is made to reduce it. The deaths per thousand live births during 1932 were 4.21, as compared with 4.11 in 1931. The rate for 1932 was lower than those for the three preceding years, which were: 1928, 4.42; 1929, 4.33; 1930, 4.40.

An attempt was made to attribute the slight increase of 1932 to "a dangerous desire to economize" on the part of the government. But the minister of health has pointed out that it is not possible to attribute these small variations in the yearly rate to any specific causes or, indeed, to assign to them any statistical significance. As a matter of fact the number of antenatal clinics in England increased by eighty-four during 1932, making a total of 1,277, and there was also an addition of 274 maternity beds. But the minister finds it a matter of concern that, though the maternal mortality shows no increase of statistical significance, it has not shown the same marked and satisfactory fall as has been observed of late years in the general death rate and notably in the infant mortality rate.

A New Method of Photographing Finger Prints

A new method of photographing finger prints has been devised by Prof. H. L. Brose and Mr. C. G. Winson of the physics department of University College, Nottingham, working with local criminal investigation departments. In the method commonly used, the background interferes to some extent with the finger impressions. The new method involves the use of phosphorescent powders and only the phosphorescent light from the finger prints is used. The result is that a photograph without traces of background is obtained. Fluorescent powders have also been used successfully, but with greater difficulty.

PARIS

(From Our Regular Correspondent)

July 26, 1933.

Medical Congress in Algeria

The Fédération des sociétés médicales d'Algérie met recently in Algiers, under the chairmanship of Professor Tournade, for the third time since its foundation. Through the adhesion of the medical societies of Tunisia, it became the Fédération des sociétés algériennes et tunisiennes, which constitutes a very important scientific group for all of northern Africa that is under French control. Only Morocco is lacking. The main objective of the session was to study tuberculosis in those vast regions in which the native population is predominant and in which tuberculosis causes many deaths by reason of the unwillingness of the Mussulmans to accept the principles of modern hygiene. Eight papers were presented on this topic. Dr. Sergent, director of the Institut Pasteur in Algiers, pointed out that, by means of skin reactions to tuberculin, it has been shown that tuberculosis is becoming every year more prevalent among the natives, this fact being evident even in the most distant regions of the oases of the Sahara, the incidence increasing with more extensive contacts with Europeans. Dr. Argenson concluded that the climate of Algiers, although hotter, is not extremely different from that of Paris, and that the example of a neighboring country, Egypt, proves that tuberculous patients can be properly cared for in Algeria. The clinical point of view was discussed in three papers: that of Professor Gillot of Algiers and Dr. Sarrouy, on "Tuberculosis in the native children of Algeria"; that of Dr. Lévy-Valensi, on "Pulmonary tuberculosis in native adults of Algeria." Two conclusions may be deduced from these papers: the gravity of tuberculosis in Algerian natives, and the rapidity of the evolution of the symptoms. Professor Lombard of Algiers discussed the treatment of tuberculosis of the bones and joints and of the lymphatic glands, in Algeria. This paper was followed by the presentation of a film that showed the Matifou Preventorium and the heliotherapeutic service in Douéra. The crusade against tuberculosis in Tunisia was discussed by Dr. Mazères of Tunis, and the organization of the crusade against tuberculosis in Morocco by Drs. Colombani and Lapin of Morocco. The following conclusions were reached: (1) Tuberculosis is developing rapidly among the natives of northern Africa; (2)

the existing antituberculosis endeavors must be strengthened; (3) by reason of the climate, it does not appear feasible to establish, in northern Africa, sanatoriums properly so called; but it is necessary to create hospitals for treatment. Several invited guests delivered addresses: Professor Mauriac of Bordeaux, on "Le malaise scientifique ou l'intelligence a l'uniforme"; Professor Weinberg, of the Institut Pasteur, Paris, on "The Antigangrene Serum and Its Use in Therapeutics"; Professor Mouriquand of Lyons, on "The Syndromes of Nonassimilation: Their Clinical and Biologic Aspects"; Dr. Forestier of Paris, on "The Radiologic Applications of Iodized Oil"; Professor Constantini of Algiers, on "Nontuberculous Pulmonary Suppurations." A film on smallpox in northern Africa, presented by Dr. Mazères of Tunisia, closed the series of addresses. The next session of the federation will be held at Tunis, in 1934, under the honorary chairmanship of Professor Nicolle.

Study of Heart and Lungs by Means of Cinematographic Radiography

Cinematographic radiography, as used by Prof. Léon Bernard, has already rendered good service for the study of the movements of the lung. Ravina and Cottenot have demonstrated, before the Société des médecins des hôpitaux de Paris, that the method will also contribute to knowledge of the heart's action. They performed experiments on anesthetized dogs by injecting opaque substances into the auricle by means of a sound introduced into the external jugular vein. With the aid of a special apparatus, they were able to roentgenograph the heart in systole or in diastole. The images secured show that in systole the auricle appears almost vertical, while the ventricle resembles a horn in shape, and the pulmonary artery appears distended. In diastole, the heart changes its form; the ventricle becomes roundish; the auricle stretches itself out, and the pulmonary artery is less dilated. In right lateral decubitus, even the closing of the auriculoventricular orifices can be observed.

Growth of Blood Transfusion

In France the development of blood transfusion as a public service has been slow and difficult. Such a service did not become possible until a group of charitable women secured from Mr. Mourier, director of public assistance in Paris, the necessary authority to establish a special service in the Hôpital St. Antoine, the administrative costs of which were paid through the contributions of the members of the society. When, with the more extensive development of the service, the funds furnished by the society became insufficient, Mr. Mourier extended financial aid in increasing amounts. The last meeting of the association furnished evidence of the progress that the service has constantly made. A close collaboration exists today between the private society and the administration of public assistance. At present, all the hospitals controlled by the public assistance administration have recourse to the aid of this service, and, in addition, the Maison de santé des Gardiens de la paix, the Clinique de Martel, the Hôpital Rothschild, the American Hospital, and the English Hospital. The following figures show the growth of the service during the past four years: in 1929, 220 transfusions were effected; in 1930, 779; in 1931, 2,038, and in 1932, 3,738, or an average, in 1932, of more than 10 daily. This service, in order to be practicable and prompt, presupposes a perfect organization: the recruiting and medical examination of donors, classification of their record cards, matters of guardianship, repeated telephone calls for each transfusion, inspections in the hospitals, verification of each certificate of transfusion—these are the chief functions associated with the new service at St. Antoine. As the result of a decision reached by Mr. Mourier, henceforth all donors' fees in connection with transfusions performed in the various hospitals will be regulated by the public assistance administration, which assumes also

other charges: fees paid to donors, fees for work among the poor, 50 per cent of the fees for the transfusions performed at the *Maison de santé des Gardiens de la paix*, traveling expenses of the donors, and expenditures for instruments and general administration. Many cities of France and many foreign cities have requested information with a view to organizing similar centers. In some emergency cases, donors have been summoned by radio and have been transported by airplane.

Medical Supervision of Sports in the Schools

Although the minister of public instruction favors physical education and the pursuit of sports in the schools and universities, it is peculiar that he has not until recently favored medical supervision of sports. His intentions are excellent, but he has always deferred creating the needed organization. The *Comité Olympique français* and the *Comité national des sports* recently delegated one of their members, Dr. Collet, to present to the minister a complete report on the subject. In his report, Dr. Collet advances the principle that physical education and sport activities should be provided for in the curriculum of all institutions of learning and that they should remain constantly under medical control, which, thus far, has been unorganized. He recommends that a medical examination be made at the opening of school every year, and that several examinations be made during the year, particularly before every important competitive event, and that the results of these examinations be registered on record cards. It is important to determine, for each kind of sport, the types of pupils that may, with profit, participate. Participation in sport contests should be prohibited unless preceded by a favorable medical examination. The main purpose of the medical examination, at the opening of the school year, is the detection of bad cases, and the results should be communicated to the family physician of the pupil or student, in order not to embarrass the position of that physician. A certificate entitling the holder to participate in university sports should be denied to applicants under 18 and more than 27 years of age. The certificate should be issued by the head of the university. The federations of athletic associations (*fédérations sportives*) will not accept for an athletic event any candidate who fails to satisfy these conditions.

BERLIN

(From Our Regular Correspondent)

July 31, 1933.

Sterilization to Improve the Race

The federal cabinet has enacted a law for the prevention of offspring with serious hereditary defects, which has been anticipated for some time. With this law, a fundamental idea of the national-socialist party, with respect to eugenics, has been put forward. The new law is framed to aid in the elimination of offspring with marked hereditary defects and thus to promote a racial improvement. The negative measures for the prevention of offspring with serious hereditary defects will be followed by positive legislative measures for the protection of families with sound hereditary attributes, and particularly the families with many children.

In the explanations that accompany the law will be found the following passage: "Whereas the families with sound hereditary attributes have, for the most part, adopted the system of one or no children, countless individuals of inferior type and possessing serious hereditary defects are propagating unchecked, with the result that their diseased progeny becomes a burden to society and is threatening, within three generations, to overwhelm completely the valuable strata. Since sterilization is the only sure means of preventing the further hereditary transmission of mental disease and serious defects, this law must be regarded as an evidence of brotherly love and of watchfulness over the welfare of the coming generation. The law

cannot be so far reaching as to include all persons with defects; particularly, not all the milder cases of mental disturbance, nor the healthy bearers of hereditary disorders. It aims to reach only the pathologic groups that, on the basis of the recognized rules of hereditary transmission, will, in all probability, produce progeny characterized by serious hereditary defects."

The law provides that a person who has transmissible hereditary defects may be sterilized by surgical intervention if, according to the experiences of medical science, it is to be expected that his offspring will suffer from severe bodily or mental hereditary injuries. As hereditary diseases in this sense are to be regarded: congenital weak-mindedness, schizophrenia, circular (manic-depressive) insanity, hereditary epilepsy, hereditary chorea minor, hereditary blindness, hereditary deafness, severe hereditary bodily deformities. Of especial importance is the regulation that sterilization can be performed on persons who are suffering from severe alcoholism. In the case of drunkenness, however, the authorities will confine their attention to the severe types with which is associated bodily or mental inferiority, so that offspring from such persons cannot, for numerous reasons, appear desirable. Through this enumeration and the restriction to disorders that can be regarded as adequately investigated, the objection is met, as is expressly emphasized, that valuable biologic material may be unwittingly destroyed.

The request for sterilization can be made by the person to be sterilized or by his legal representative, in which connection it is emphasized that laymen must bring a certificate stating that they have been enlightened by a physician concerning the significance and consequences of the intervention. In the interest of society, the health officer or the director of so-called closed institutions may file a request for mental patients.

To decide on such requests, so-called hereditary health courts will be created, which will consist of a judge as chairman, a health officer and another physician who has an adequate knowledge of the theory and teachings of hereditary health. The transactions are not public. Physicians are under obligations to supply evidence without reference to the right of privileged communication. An appeal may be taken from a decision. The intervention will be performed by physicians specially chosen for the purpose by the government. The operation will be done in a hospital but not by the physician who filed the request or who participated in the court examination. If the sterilization has been definitely decided on, the measure can, if necessary, be compulsorily enforced, provided the request for sterilization was not made exclusively by the person to be sterilized.

The expense of the court procedure is borne by the central government. Since, in many instances, the *krankenkassen* and the welfare league will be saved, in the future, considerable expense by a proper enforcement of the law, they will be expected to bear the burden of the additional expenditures for the medical intervention. In all other cases the central government will bear, up to the amount of the minimal fees of the medical fee schedule, the hospital expenses and the physician's fees, since, as a rule, no guilt attaches to the person to be sterilized.

Sterilization that is not performed in accordance with the provisions of this law (that is, sterilization on the basis of social indications) is punishable according to the regulations pertaining to the infliction of bodily injury, unless it is performed by a physician, with the consent of the person sterilized, for the warding off of serious danger to health and life.

The castration of violent criminals has not been incorporated in the new law, the idea being to avoid the impression that sterilization is a punishment. That is, however, not to be taken as evidence that castration of criminals has been abandoned; for it is planned to put such castration into practice with the beginning of the coming year. In this connection, attention is called especially to the difference between sterilization and cas-

tration. Sterilization is a purely external intervention without any health disturbing or functional results, whereas in castration the generative glands are removed.

The new sterilization law goes into effect, Jan. 1, 1934. The fundamental idea is to associate the order for sterilization with objective factors and with a judicial procedure protected by many guaranties at law. The personal desire to be sterilized, in itself, cannot and must not be considered as important. The danger that persons with such desires, born of the endeavor to secure unrestrained sexual gratification without fear of consequences, might find all too easily a willing surgeon, as well as other possible abuses, has been studiously avoided.

In Hamburg, castration for persons guilty of crimes against good morals is already provided for by law. In order effectively to protect children and juveniles of both sexes against violators of laws upholding good morals, who nearly always become repeaters, the police authorities of Hamburg have decreed that all criminal violators of moral laws, who have been duly sentenced according to law and have become a menace owing to repetition of such crimes, or who, it is feared, will repeat their crimes, must, on dismissal from a penal institution, be taken into custody and transferred to a concentration camp. They may be released from such custody if, following a hearing before official medical experts, preceding their dismissal from the penal institution or immediately thereafter, they voluntarily, or on the advice of duly constituted authorities, consent to the performance of castration in a government hospital.

Marriages Between Relatives

Greater attention than formerly is being paid to the question of marriages in which the contracting parties are blood relatives. Professor Lenz, an investigator in problems of heredity, of Munich, discusses in the *Münchener medizinische Wochenschrift* the questions as to whether there are any reliable statistics on the dangers connected with the marriage of blood relatives, and as to what the effects are on posterity. These questions touch on a long-felt need in scientific research. Statistics exist, to be sure, showing the approximate percentage of numerous hereditary disorders that relate back to marriage between blood relatives; but there is little reliable information as to what percentage of children with hereditary defects are the offspring of marriages between blood relatives. Moreover, in connection with medical advice to persons contemplating marriage, every case in which consanguinity between the contracting parties is involved must be judged on its own merits, the decision depending on the degree of consanguinity, and the degree and nature of the possible hereditary defects.

From reports of the Reichsdeutscher Blindenverband the following statements pertaining to the hereditary nature of blindness have been derived: The marriage of blood relatives constitutes an increased danger of hereditary transmission of blindness. In Switzerland, it was found that 4.3 per cent of the blind persons were offspring of marriages between blood relatives. A similar percentage (4.71) was found in Germany among the congenitally blind. It has been computed that, in general, among the offspring of marriages between blood relatives, there are $7\frac{1}{2}$ times as many blind persons as from other marriages. The fact that among the Jews the incidence of blindness is greater than among the remainder of the population of Germany (the ratio is as 63 to 53) is doubtless due to the increased danger of hereditary transmission resulting from marriage between blood relatives. In general, however, blind persons contribute through their offspring only to a slight extent to the total number of blind persons—scarcely more, in proportion, than does the remainder of the population. It appears likely, nevertheless, that when the contracting parties are blood relatives and are both blind, there is an increased danger of hereditary transmission (*THE JOURNAL*, Sept. 27, 1930, p. 949).

Research on Vitamins and Hormones

There has been, of late, an almost uncanny development in the research on the nature of vitamins. Only recently, vitamins A, B₁, C and D have been made known in quick succession (*THE JOURNAL*, Aug. 19, 1933, p. 616), and now B₂ is in the limelight. It has already been isolated in pure form, and its general formula has been established (a report on which was made by Prof. R. Kuhn of the Kaiser Wilhelm-Institut in Heidelberg in the *Berichte der Deutschen Chemischen Gesellschaft*). The rest will soon follow. The discovery of the nature of this antipellagra vitamin was brought about by many strange detours. The first step was accomplished when various investigators called attention to the reddish-yellow pigments in the cells, which were characterized by strong fluorescence and great sensitiveness to light. They differ from the other yellow cellular pigments, the fat-soluble carotenoids, by reason of their solubility in water, and are equally far removed from the hemins of the cell. It belongs, therefore, to an entirely new group termed "lyochromes." As it was found, on the other hand, that preparations of B₂ likewise contain similar pigments, the ring could now be closed.

R. Kuhn isolated from eggs and milk apparently identical pigments (ovoflavine and lactoflavine, respectively), which have the properties sought. To the pure substances Kuhn has assigned the formula $C_{17}H_{22}N_2O_6$; they appear to lie close to the uric acid group or to the closely related pigments found in the wings of insects. In the cell itself they are fixed to a higher complex by protein or carbohydrate. Lactoflavine, as a result of animal experimentation, proved to be the most potent preparation of B₂ as yet discovered. It was effective in daily doses of $\frac{1}{16,000}$ mg., but only when a further (colorless) factor derived from yeast and previously unknown was present. To this group of lyochromes belongs also the "second respiratory ferment" obtained from cells by Warburg (*THE JOURNAL*, Aug. 19, 1933, p. 616). With these results the circle is closed also at this point: also vitamin B₂ acts, as does vitamin C, in such a manner that it becomes alternately reduced and oxidized in the cell and thus exerts a decisive influence on the general metabolism of the respiratory cell.

But some even more startling connections were discovered. It has been known for some time that substances having an action similar to sex hormones of animal origin are present also in plants (*THE JOURNAL*, May 6, 1933, p. 1445). A close relationship between these two groups of animal and vegetable hormones was at once assumed, but proof of their identity was not furnished. After Butenandt had discovered and explained the structure of the sex hormones, he was in a position to attack the foregoing problem. In collaboration with Jacobi, he produced from palm seeds the female principle ("thelykinin") in pure form and compared it with the follicular hormone derived from the urine of a pregnant woman. In a statement in the *Zeitschrift für physikalische Chemie*, he avers that the two substances were identical. His research furnishes proof of the existence of true sex hormones in the plants, and this discovery gives rise at once to questions of the greatest biologic significance, aside from the importance of the rôle of the hormones with respect to the plants themselves. The question arises as to whether the animal hormone is simply taken in with the food and stored. If that should prove to be the case, why does it exert no effect before the onset of sexual maturity? But the most important consideration is: If it is true that the animal hormone is derived from the plant food, then, according to previous terminology, it is not a hormone at all but a vitamin, and a distinction between the two substances is artificial and would have to be abandoned. But these questions cannot be answered as yet. On the basis of recent results, one is, however, justified in at least raising and seriously discussing such questions.

Fees and Opinions on Value of Drugs

The newly established Nationalverband der deutschen Heilmittelindustrie has made the following announcement: No further fees shall be paid to physicians for articles or expert opinions on medical preparations. However, no objection will be made if a physician is remunerated in advance to compensate him for expense and loss of time in preparing expert opinions on medicinal preparations. In such an event, however, a written agreement must be signed, and it must be expressly stated that the fee was paid before the beginning of the investigation, and it must be left to the physician whether he will publish the results of his inquiry, irrespective of the fact as to whether his opinion is favorable or unfavorable to the preparation.

Gustav Embden's Death

Prof. Gustav Embden died suddenly in Frankfort-on-Main, at the age of 59. He was a pupil of Hofmeister in Strasbourg, and came, in 1906, to Frankfort-on-Main, where he took over, in the von Noorden clinic, the chemical, clinical and physiologic researches, and, before the founding of the University of Frankfort-on-Main, brought the laboratory researches of the Municipal Hospital to a position of importance. In 1914 he became ordinarius in chemical physiology at the new university and, at the same time, director of the Municipal Chemicophysiology Institute and of the University Institute for Vegetative Physiology. The scope of his research work was extensive, and his scientific investigations on the chemical processes of the muscle, on the metabolism of phosphorus, and on the metabolism of the liver, brought him international recognition.

ITALY

(From Our Regular Correspondent)

June 30, 1933.

Experiments on a Pregnancy Test

Professor Spirito, of the University of Siena, reported to the Accademia dei fisiocritici his research on a pregnancy test using the urine of a gravid woman and intra-ocular ovarian transplants. He based his research on the experiments of Schochet and MacKee and of Neuman, who showed that fragments of the uterus transplanted into the anterior chamber of the eye of the rabbit reveal changes with relation to the estrual cycle. In Spirito's experiments the intra-ocular transplants of rabbits remained alive for several months. His studies are still inconclusive. The advantage of the method would be that it would be possible to perform a test under direct vision many times on the same animal, owing to the peculiar mechanism of ovulation in the rabbit.

Congress of Legal Medicine

The fifth Congresso nazionale di medicina legale was held recently in Rome, under the chairmanship of Professor Ottolenghi, director of the Istituto de medicina legale of the Royal University. Professor Lattes presented a paper on "The Blood Groups," especially the subgroups.

Professor Nicoletti of Palermo dealt with relations between blood groups and morphologic characters: head, ear, eye, color and appearance of the hair, and color of the skin. Palmieri of Naples reported the results of his research on the relation between group-specific properties and osmotic pressure of the blood.

The second main topic listed concerned the problems of medicine with relation to insurance. Professor Giannini explained the evolution of the conception of risk in social insurance, and the position of medicine with relation to various forms of insurance. The risk is no longer to be regarded as a mere legal relation but rather as a potential damage to productivity that threatens, in the individual, society.

Professor Cazzaniga of Milan offered a communication on some medical problems pertaining to insurance, in which infections are involved. He discussed expert medical opinions on the diagnosis of infections, the occupational nature of risks, and the evaluation of disability.

Professor Palmieri of Naples considered the much debated question of the age limits for the granting of old age pensions and endorsed the continuance of the present limit of 65 years for men and the lower limit of 60 years for women.

The third topic concerned criminal anthropology and the scientific organization of police work. Dr. Di Tullio spoke on the applications of a knowledge of the personality of a delinquent in the new penal legislation of Italy, calling attention to the modern legislative tendency toward judicial and administrative individualization with respect to penalties.

It is necessary that judges shall have an adequate knowledge of modern anthropology and criminal psychology, sciences that embrace all the necessary ideas for the complete biologic study of the delinquent and for the application of new criteria of penal justice.

The Medicosurgical Society of Catania

Professor Alaimo spoke before the Società medico-chirurgica of Catania on dacryocystitis in the new-born. The diagnosis must be made early, in order to provide effective therapy, which comprises massage of the lacrimal region every other day, accompanied by medication of the conjunctival sac with ethylhydrocupreine (optochin) ointment and mild silver-protein, without resorting to exploration of the lacrimal tracts. This method effects constantly a cure.

Professor Greco reported three cases of vesical diverticula, which did not interfere with urination and had none of the characteristics of congenital diverticula. All three patients presented a sacrolumbar rachischisis. The speaker holds that vertebral malformation may provoke spasms of the excretory passages, acting thus as a mechanical obstacle and increasing the efforts of the bladder to perform its function.

Dr. Giuffrida, on the basis of research on laryngeal tuberculosis, affirmed that there is a latent tuberculosis of the larynx in 90 per cent of the cases in the microscopically sound larynges of persons affected with pulmonary tuberculosis. The latent lesions are frequently located in the lymphoid tissues of the larynx.

Detail Drug Salesmen Prohibited

A decree has been proclaimed forbidding unfair practices in promoting the sale of medicinal products. Violations of the order may bring suspension of the right to practice medicine or temporary closure of a pharmacy. Pharmaceutical houses are forbidden to send, as in the past, their representatives to physicians with a view to advertising their preparations.

Marriages

MARTIN VAN BUREN TEEM to Miss Louise Greene, both of Marietta, Ga., at Elizabethtown, Ky., July 8.

OSCAR BERYL MURRAY, Lafayette, Ga., to Miss Alice Smith of Lakeview, S. C., at Aiken, S. C., in June.

LUCIOUS LAMAR DAVIDGE, Amite, La., to Miss Ruth Marsalis Smith of Jackson, July 12.

GERALD HAYNES TEASLEY, Atlanta, Ga., to Miss Anne Redus Smith of Elkmont, July 8.

PAUL H. THOROUGH, Omaha, to Miss Margaret Cunningham of Schuyler, Neb., June 17.

OMAR J. EAST, Reed City, Mich., to Mrs. Violet Green at Elkhart, Ind., July 18.

LANDON G. GANT, Rushville, Neb., to Miss Virginia Hassler of Omaha, June 15.

HARRY B. FERMAGLICH to Miss Iris Loomer, both of Brooklyn, June 25.

Deaths

William Ray Bathurst ☉ Little Rock, Ark.; University of the South Medical Department, Sewanee, Tenn., 1898; member of the House of Delegates of the American Medical Association, 1920-1928, 1930, 1932 and 1933; secretary of the Arkansas Medical Society; past president of the Southern Medical Association; professor of dermatology, University of Arkansas School of Medicine; fellow of the American College of Physicians; member of the American Radium Society; on the staffs of the Missouri Pacific, Baptist State, Arkansas Children's hospitals and St. Vincent's Infirmary; aged 57; died, August 30.

Samuel Smith Cottrell, Boston; Boston University School of Medicine, 1914; member of the Massachusetts Medical Society, American Psychiatric Association and the New England Society of Psychiatry; formerly instructor in psychiatry, Tufts College Medical School; served during the World War; chief executive officer of the Boston Psychopathic Hospital; aged 44; died, July 16, of bronchopneumonia.

Robert Lee Woodard, Hopkinsville, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1896; member and past president of the Kentucky State Medical Association; past president of the Christian County Medical Society; county health officer; on the staff of the Jennie Stuart Memorial Hospital; served during the World War; aged 59; died, July 29, of cerebral hemorrhage.

Harry Raymond Carson, North Chicago, Ill.; University of Nebraska College of Medicine, Omaha, 1910; member of the American Psychiatric Association; served during the World War; medical officer in charge of the Veterans' Administration Hospital; aged 59; died, July 31, in the Veterans' Administration Hospital, Oteen, N. C., of tuberculosis.

Martin Warner Hanson ☉ Havana, Ill.; Jenner Medical College, Chicago, 1908; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; served during the World War; aged 54; died, July 30, in St. Francis Hospital, Peoria, of septicemia and cellulitis of the face.

Willard Tipple Rivenburgh, Poughkeepsie, N. Y.; Albany (N. Y.) Medical College, 1910; member of the Medical Society of the State of New York; served during the World War; aged 47; on the staff of the Vassar Hospital, where he died, August 11, following an operation for gallstones and appendicitis.

James Lee Funkhouser, Danville, Ill.; Medical College of Indiana, Indianapolis, 1905; member of the Illinois State Medical Society; served during the World War; on the staffs of the Veterans' Administration Home and the Lakeview Hospital; aged 50; died, August 11, of an accidental gunshot wound.

Oscar Jay Bowman, Horseheads, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1893; member of the Medical Society of the State of New York; for many years member of the board of health of Horseheads and the school board; aged 72; died, July 26.

Edward John Denning ☉ Boston; Harvard University Medical School, Boston, 1905; associate professor of theory and practice of medicine, Tufts College Medical School; on the staff of the Carney Hospital; aged 53; died, June 28, at his summer home in Cohasset, Mass.

Edward Clark Davidson ☉ Detroit; Johns Hopkins University School of Medicine, Baltimore, 1920; fellow of the American College of Surgeons; on the staffs of the Children's Hospital of Michigan and the Harper Hospital; aged 39; died, August 7, of heart disease.

John Joseph Michael Farrington, Mechanicsville, Md.; Georgetown University School of Medicine, Washington, D. C., 1931; member of the Medical and Chirurgical Faculty of Maryland; aged 28; died, August 14, of accidental drowning while fishing near Leonardtown.

John Hathaway Lindsey ☉ Fall River, Mass.; University of Pennsylvania School of Medicine, Philadelphia, 1899; member of the American Roentgen Ray Society and the New England Roentgen Ray Society; served during the World War; aged 62; died, July 29.

John Dale Graham, Columbus, Kan.; University of Kansas City (Mo.) Medical Department, 1904; member of the Kansas Medical Society; on the staff of the Maud Norton Memorial City Hospital; aged 59; died, June 25, of septicemia, following influenza.

David William Edelman, Los Angeles; University of the City of New York Medical Department, 1891; member of

the California Medical Association; aged 64; on the staff of the Cedars of Lebanon Hospital, where he died, August 6, of heart disease.

Telephore E. Caron, Kankakee, Ill.; Laval University Medical Faculty, Montreal, Que., Canada, 1891; member of the Illinois State Medical Society; on the staff of St. Mary's Hospital; aged 68; died, August 17, of carcinoma with metastases.

Harvey H. Carter, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1889; member of the Ohio State Medical Association; aged 67; died, August 17, in the Good Samaritan Hospital following an operation for strangulated hernia.

Leslie Burritt Joslyn ☉ Maywood, Ill.; Northwestern University Medical School, Chicago, 1910; aged 47; on the staff of the Westlake Hospital, Melrose Park, where he died, August 18, of injuries received in an airplane accident.

Adelbert Edwards, Reedsburg, Wis.; State University of Iowa College of Medicine, Iowa City, 1885; Rush Medical College, Chicago, 1889; member of the State Medical Society of Wisconsin; aged 72; died, August 11.

Hilliard Elias Griffin, Coffeeville, Miss.; Memphis (Tenn.) Hospital Medical College, 1905; served during the World War; aged 55; died, August 12, in the Grenada (Miss.) Hospital, of chronic interstitial nephritis and uremia.

Oscar Jarrell Hagebush ☉ Ashley, Ill.; Washington University School of Medicine, St. Louis, 1901; formerly managing officer of the Anna (Ill.) State Hospital; aged 55; died, August 6, of a skull fracture received in a fall.

Donald Bunker Sinclair ☉ Princeton, N. J.; Columbia University College of Physicians and Surgeons, New York, 1914; served during the World War; on the staff of the Princeton Hospital; aged 44; died, August 9.

John Hamilton Hanes, Columbus, Ohio; Ohio Medical University, Columbus, 1897; member of the Ohio State Medical Association; formerly county coroner; aged 71; died suddenly, August 15, of organic heart disease.

Charles Howard Bangs, Swampscott, Mass.; Medical School of Maine, Portland, 1892; member of the Massachusetts Medical Society and the New England Dermatological Society; aged 72; died, August 6.

Asbury Harpending Baker ☉ Elmira, N. Y.; University of Buffalo School of Medicine, 1885; aged 72; on the staff of the Arnot Ogden Memorial Hospital, where he died, June 11, of cerebral hemorrhage.

Helen Mary Buchanan, Chicago; Chicago Homeopathic Medical College, 1882; aged 84; died, July 31, in the Chicago Memorial Hospital, of subphrenic abscess, cholelithiasis, cholecystitis and cholangitis.

Wilbur L. Wright, Fulton, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1894; aged 74; was found dead in bed, July 9, of coronary thrombosis, arteriosclerosis and nephritis.

Harry Bell Bertolette, Shreve, Ohio; University of Pennsylvania School of Medicine, Philadelphia, 1892; served during the World War; aged 66; died suddenly, August 10, of coronary thrombosis.

Benedict P. Wentker ☉ St. Charles, Mo.; Beaumont Hospital Medical College, St. Louis, 1900; aged 59; on the staff of St. Joseph's Hospital, where he died, August 4, of pulmonary embolism.

Eugene Duncan Clarke Bayne, East Cleveland, Ohio; Cleveland College of Physicians and Surgeons, Medical Department of Ohio Wesleyan University, 1899; aged 61; died, August 4.

Henry F. Jones, Flat Rock, Ill.; University of Kentucky School of Medicine, Louisville, 1885; member of the Illinois State Medical Society; aged 79; died, August 6, of cirrhosis of the liver.

Jacob Cohen ☉ Brooklyn; University and Bellevue Hospital Medical College, New York, 1921; on the staff of the Beth Moses Hospital; aged 36; died, August 14, in the Jewish Hospital.

Edward Jacob Stone, Chicago; Rush Medical College, Chicago, 1921; clinical assistant in obstetrics and gynecology at his alma mater; aged 38; died, August 7, of angina pectoris.

Hartwell James Frederick ☉ Augusta, Maine; Medical School of Maine, Portland, 1884; on the staff of the Augusta General Hospital; aged 74; died, July 16, of aortic stenosis.

Joseph Alfred Choquette, Lewiston, Maine; School of Medicine and Surgery of Montreal, Que., Canada, 1904; aged 58; died, July 26, in Montreal, of intestinal obstruction.

Charles Sumner Gregory, Findlay, Ill.; Keokuk (Iowa) Medical College, 1896; member of the Illinois State Medical Society; aged 58; died, August 12, of heart disease.

Elizabeth H. Gerow, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1875; aged 88; died, August 16, of carcinoma of the lungs.

William John Wulstein, Ashton, Ill.; Hahnemann Medical College and Hospital, Chicago, 1903; aged 63; died, August 12, in the Methodist Hospital, Peoria.

Walter Clarence Coney, Jonesville, La.; Louisville (Ky.) Medical College, 1897; health officer of Catahoula parish; aged 65; died, July 8, of heart disease.

Zack Hinkson Hauser, Columbus, Ind.; Medical College of Indiana, Indianapolis, 1866; aged 94; died, August 4, in the Bartholomew County Hospital.

Robert Emmett Robinson, Morrison, Ill.; University of Michigan Medical School, Ann Arbor, 1870; aged 85; died, August 12, of heart disease.

Henry Jacob Cordier, Denver; University of Michigan Medical School, Ann Arbor, 1879; aged 82; died, July 18, of carcinoma of the prostate.

Thomas Spencer Layton, Hinesville, Ga.; Southern Medical College, Atlanta, 1891; formerly mayor and bank president; aged 75; died, June 30.

Thomas Charles Cannon, Jonesboro, Ga.; University of Georgia Medical Department, Augusta, 1883; aged 75; died, July 16, at Americus.

James Douglas Nisbet, Van Wyck, S. C.; Louisville (Ky.) Medical College, 1886; aged 72; died, July 27, in a hospital at Charlotte, N. C.

Paul Penney French, Boise, Idaho; Rush Medical College, Chicago, 1897; aged 59; died, July 1, in St. Luke's Hospital, of bronchopneumonia.

Robert Wallace Craig, Phoenix, Ariz.; Rush Medical College, Chicago, 1895; aged 61; died, July 10, of erysipelas and acute nephritis.

John F. Blankenship, Havana, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1890; aged 75; died, July 19, at Forest City.

Joseph Baulne, St. Andre Avelin, Que., Canada; Victoria University Medical Department, Coburg, Ont., 1888; aged 73; died, April 29.

William Henry Feurt, Proctorville, Ohio; Miami Medical College, Cincinnati, 1876; aged 81; died, July 19, at Wheelersburg.

Bernhard Stern @ Brooklyn; Long Island College Hospital, Brooklyn, 1896; aged 62; died, July 26, in Montreal, Que., Canada.

Willard Clayton Emery, Kenton, Ohio; Pulte Medical College, Homeopathic, Cincinnati, 1879; aged 77; died, July 30, of embolism.

John H. Giles, Ripley, Miss.; University of Louisville (Ky.) School of Medicine, 1882; aged 76; died, July 16, of cerebral hemorrhage.

Samuel T. Hubbs, Elizabethtown, Ky.; Hospital College of Medicine, Louisville, 1875; aged 90; died, August 1, of cerebral hemorrhage.

François Adelme Joncas, St. Vallier, Que., Canada; Laval University Faculty of Medicine, Quebec, 1904; aged 55; died, April 18.

Moses Collins, Lexington, Ky.; Louisville Medical College, 1887; aged 68; died, August 12, of subacute bacterial endocarditis.

C. C. Bentley, Quito, Tenn.; University of Louisville (Ky.) School of Medicine, 1892; aged 82; died, July 23, of heart disease.

George Etienne Bédard, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, 1903; aged 57; died, June 2.

James Henry Cully, Pembroke, Ont., Canada; McGill University Faculty of Medicine, 1921; aged 37; died, July 20.

Jacob D. Fleming, Frazesburg, Ohio; Columbus Medical College, 1887; aged 76; died, July 21, of organic heart disease.

James F. Madden, Toledo, Ohio; Keokuk (Iowa) Medical College, 1892; aged 64; died, July 25, of coronary thrombosis.

Moritz Wulfson Dreyer, Brooklyn; University of Juriev, Russia, 1889; aged 70; died, August 20, of heart disease.

John Taylor Gilman Emery, Saco, Maine (licensed, Maine, by years of practice); died, April 30.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Von's Pink Tablets.—Omaha Von Co., Omaha, Neb. Composition: Essentially bismuth subnitrate, magnesium oxide and sodium bicarbonate. For acidosis, stomach ulcers, etc. Fraudulent therapeutic claims.—[N. J. 19468, December, 1932.]

Blackhawk's Compound Liniment.—Blackhawk Remedy Co., Baltimore, Md. Composition: Essentially a crude mineral oil, gasoline, red pepper, methyl salicylate, and oils of mustard, eucalyptus and turpentine. Fraudulent therapeutic claims.—[N. J. 19159; Oct. 10, 1932.]

Renolin.—Renolin Co., Bradford, N. H. Composition: About 8 grains of cinchophen in each tablet. Falsely declared harmless. For rheumatism, neuritis, lumbago, etc. Fraudulent therapeutic claims.—[N. J. 19160; Oct. 10, 1932.]

Urodonal.—George J. Wallau, Inc., New York. Composition: Essentially methenamine (4 per cent), sodium phosphate (18 per cent), baking soda, tartaric acid, citric acid, and a small amount of sugar. For rheumatism, eczema, asthma, etc. Fraudulent therapeutic claims.—[N. J. 19477; December, 1932.]

Hammer's Kidney and Bladder Pills.—Hygenol Co., Minneapolis. Composition: Saltpeter, extracts of plant drugs including licorice and a laxative drug, and juniper oil. Fraudulent therapeutic claims.—[N. J. 19479; December, 1932.]

Rico Rheumatism Remedy and Rico Tablets.—Rico Medicine Co., Chicago. Composition: Rheumatism Remedy contained potassium iodide and a small amount of plant material such as celery, with alcohol and water; Tablets contained ammonium salicylate, potassium iodide, an iron compound and extracts of plant drugs, including a laxative. Fraudulent therapeutic claims.—[N. J. 19481; December, 1932.]

Beam Rheumatism Exterminator.—Beam Medicine Co., Waterloo, Iowa. Composition: Small amounts of sulphuric acid, common salt, extracts of plant drugs including a laxative, and 98.3 per cent of water. Fraudulent therapeutic claims.—[N. J. 19482; December, 1932.]

Carey's Lifetone Prescription.—Gallagher Drug Co., Dayton, Ohio. Composition: Pills containing ferrous carbonate, strychnine, zinc phosphide and juniper oil. For general debility, brain fatigue, etc. Fraudulent therapeutic claims.—[N. J. 19483; December, 1932.]

Carey's Marshroot Laxative Pills.—Gallagher Drug Co., Dayton, Ohio. Composition: Aloe and podophyllum extract. Fraudulent therapeutic claims.—[N. J. 19483; December, 1932.]

Lillibek's Antiseptic Aseptine.—Vicksburg Chemical Co., Vicksburg, Miss. Composition: Essentially small amounts of volatile oils, including menthol and peppermint, with alcohol and water, and traces of tannin and ethyl nitrite. For rheumatism, neuralgia, wounds, etc. Fraudulent therapeutic claims.—[N. J. 19485; December, 1932.]

Weldona.—Kells Co., Newburgh, N. Y. Composition: In each tablet, aspirin (0.8 grain), calcium carbonate (1.7 grain), with extract of plant drugs including licorice, and calcium carbonate, magnesium carbonate, sugar and starch. For rheumatism, etc. Fraudulent therapeutic claims.—[N. J. 19487; December, 1932.]

Munyon's Paw-Paw Tonic.—McKesson Lincoln Co., Little Rock, Ark. Composition: Extracts of plant drugs including nux vomica, a minute quantity of an iron compound, 17 per cent alcohol. For dyspepsia, nervousness, general debility, etc. Fraudulent therapeutic claims.—[N. J. 19488; December, 1932.]

Re-Ju-Va.—DeVore Manufacturing Co., Columbus, Ohio. Composition: Essentially epsom salt, small amounts of potassium, sodium and iron compounds, glycerine and water. For rheumatism, high blood pressure, blood disorders, etc. Fraudulent therapeutic claims.—[N. J. 19489; December, 1932.]

Servex.—Servex Laboratories, Ltd., Hollywood, Calif. Composition: Essentially oxyquinoline sulphate, quinine sulphate and boric acid. For leucorrhea, vaginal infections, etc. Fraudulent therapeutic claims.—[N. J. 19496; December, 1932.]

Meyer's Mount Clemens Aperient Water.—John Meyer, Mount Clemens, Mich. Composition: Common salt, epsom and Glauber's salts. For stomach, liver and kidney disorders, etc. Fraudulent therapeutic claims.—[N. J. 19497; December, 1932.]

Ki-La-Ga.—Hartig Drug Co., Dubuque, Iowa. Composition: Essentially iron, copper, albumin, zinc, calcium and magnesium compounds, sulphates and water. For eczema, erysipelas, catarrh, soft corns, etc. Fraudulent therapeutic claims.—[N. J. 19498; December, 1932.]

Phillips' Anti-Phlogistic Mud.—Denver Mud Chemical Co., Kansas City, Mo. Composition: Clay, glycerine, boric acid and essential oils, including methyl salicylate. For pneumonia, boils, rheumatism, corns, etc. Fraudulent therapeutic claims.—[N. J. 19499; December, 1932.]

Gento.—Gento Laboratories, Philadelphia, Pa. Composition: Essentially sodium, potassium and calcium compounds, methenamine, extracts of plant drugs including a laxative; alcohol and water. For general debility, liver and kidney disorders, etc. Fraudulent therapeutic claims.—[N. J. 19500; December, 1932.]

Davis' Rheumagon.—Rheumagon Sales Co., Wheeling, W. Va. Composition: Capsules each containing 8 grains of aspirin, 1.21 grains of acetphenetidin and 0.21 grain of caffeine. For rheumatism, neuritis, etc. Fraudulent therapeutic claims.—[N. J. 19501; December, 1932.]

Alexander's Lung Healer.—Valley Drug Co., Wilkes-Barre, Pa. Composition: Essentially extracts of plant drugs including ipecac, with chloroform, glycerin, sugar and water. Fraudulent therapeutic claims.—[N. J. 19503; December, 1932.]

Stillman's Douche Powder.—Stillman Co., Aurora, Ill. Composition: Essentially boric acid, zinc sulphate and a small amount of zinc phenol-sulphonate. For vaginal disorders, etc. Fraudulent therapeutic claims.—[N. J. 19506; December, 1932.]

Nitro-Methol Aseptic.—Denver Mud Chemical Co., Kansas City, Mo. Composition: Essentially ethyl nitrite, alcohol (58 per cent by volume), and small amounts of aldehydes and volatile oils, including menthol and thymol. For eczema, erysipelas, female trouble, etc. Fraudulent therapeutic claims.—[N. J. 19512; December, 1932.]

Fosfatol Tonic.—Vitagenol Medicine Co., El Paso, Texas. Composition: Essentially compounds of sodium and calcium, strychnine, phosphates, alcohol (10 per cent by volume), glycerine and water. For anemia, pneumonia, syphilis, etc. Fraudulent therapeutic claims.—[N. J. 19518; December, 1932.]

Goodwin's Silkweed Herbal Compound.—Dr. F. A. Goodwin, Chicago. Composition: Essentially extracts of plant drugs including a laxative drug such as senna, a resinous drug such as scammony, and an aromatic drug such as fennel; inorganic material such as calcium carbonate and sodium carbonate or bicarbonate. For rheumatism, malaria, liver and kidney disorders, etc. Fraudulent therapeutic claims.—[N. J. 19520; December, 1932.]

Malva.—Malva Medicine Co., Columbus, Ohio. Composition: Essentially extracts of plant drugs including laxatives, such as cascara sagrada, and a mydriatic drug such as belladonna, with alcohol, sugar and water. For general debility, etc. Fraudulent therapeutic claims.—[N. J. 19522; December, 1932.]

Citro-Nesia.—Citro-Nesia Co., Inc., Chicago. Composition: A solution of citrate of magnesia. Misbranded because the claim, "an improved citrate of magnesia," was false and misleading.—[N. J. 19190; Oct. 10, 1932.]

Germania Herb Tea.—Royal Drug Co., Chicago. Composition: Essentially senna leaves with smaller amounts of other plant drugs including corn-flower, arnica, uva ursi and mydriatic alkaloids. Fraudulent therapeutic claims.—[N. J. 19655; February, 1933.]

Ward's Pills.—Dr. Ward's Medical Co., Winona, Minn. Composition: Essentially extracts of plant drugs, such as uva ursi and buchu, with juniper oil, methylene blue and potassium nitrate. For urinary disorders, diabetes, etc. Fraudulent therapeutic claims.—[N. J. 19658; February, 1933.]

Suckow's Rheumatic Remedy.—John K. Suckow, M.D., Los Angeles. Composition: Essentially sodium salicylate, potassium iodide, colchicin, sugar and water. Fraudulent therapeutic claims.—[N. J. 19660; February, 1933.]

Lekotofia.—Karnack-Ambrosia Co., Scranton, Pa. Composition: Essentially extracts of plant drugs including aloe, with sugar, alcohol and water. For stomach, liver and kidney disorders, etc. Fraudulent therapeutic claims.—[N. J. 19664; February, 1933.]

Z-G-Herbs.—Z-G-Herbs Co., Chicago. The shipment consisted of five different products, which, when examined, were found to contain various herbs and roots. For influenza, epilepsy, impure blood, gonorrhea, etc. Fraudulent therapeutic claims.—[N. J. 19667; February, 1933.]

Lar-Io-Ben.—Marvell Pharmacal Co., Inc., New York. Composition: Essentially small amounts of common salt, iodides, benzyl alcohol and gallic acid, with glycerine and water, flavored with vanillin. For nose, throat and mouth disorders. Adulterated because below standard; misbranded because of fraudulent therapeutic claims.—[N. J. 19668; February, 1933.]

Hoyt's Vapor-Ply.—Hoyt Bros., Inc., Newark, N. J. Composition: Essentially petrolatum, with oils of camphor, menthol, eucalyptol, thymol and methyl salicylate. For influenza, muscular rheumatism, chilblains, etc. Fraudulent therapeutic claims.—[N. J. 19670; February, 1933.]

Runners Extract of Cod-Liver Oil Cordial.—C. H. Griest Co., Inc., Wheeling, W. Va. Composition: Essentially compounds of phosphorus, calcium, sodium, potassium, iron and manganese, with traces of quinine and strychnine alkaloids, wild cherry, sugar, alcohol and water, flavored. Adulterated and misbranded; fraudulent therapeutic claims.—[N. J. 19673; February, 1933.]

Earle's Hypo-Cod.—Earle I. Runner, Wheeling, W. Va. Composition: Essentially iron, manganese, calcium, quinine, strychnine and phosphorus compounds, with extracts of plant drugs including a laxative, and a solid fatty acid. Adulterated and misbranded; fraudulent therapeutic claims.—[N. J. 19674; February, 1933.]

Tripp's Tonic Prescription.—Norwood Pharmaceutical Co., Chicago. Composition: Essentially potassium iodide, extracts of plant drugs including colchicum, cinchona and a laxative, red sanders, alcohol and water. For rheumatism, impure blood, etc. Fraudulent therapeutic claims.—[N. J. 19675; February, 1933.]

Denver Mud.—Denver Mud Co., Inc., Denver. Composition: Essentially clay, glycerine and boric acid, perfumed with methyl salicylate. For congestion, inflammation, etc. Fraudulent therapeutic claims.—[N. J. 19197; Oct. 10, 1932.]

Salie's Canker Remedy.—E. R. Littlefield, Rochester, N. H. Composition: Extracts of plant drugs, including tannin, with glycerine and water. For diphtheria, diarrhea, etc. Fraudulent therapeutic claims.—[N. J. 19854; May, 1933.]

M-A-C Stomach Tonic.—Smith Bros., Berkeley and Oakland, Calif. Composition: Essentially bismuth subnitrate, calcium carbonate and magnesium carbonate, in a mixture of glycerine and water, with peppermint flavor. Fraudulent therapeutic claims.—[N. J. 19856; May, 1933.]

Hudson's Iron and Nux Liver and Blood Tonic.—Hudson Medicine Co., Hopewell, Va. Composition: Essentially epsom salt with iron, a chloride and a small amount of strychnine. Fraudulent therapeutic claims.—[N. J. 19857; May, 1933.]

Bock Toa Rheumatic Remedy.—Bock Toa Hong & Co., San Francisco. Composition: Essentially small amounts of extracts of plant drugs, with sugar, alcohol and water. Fraudulent therapeutic claims.—[N. J. 19858; May, 1933.]

Ru-Ma-Co Herbal Tonic.—F. D. Werst, Portland, Ore. Composition: Essentially extracts of plant drugs, including licorice and a laxative drug, with glycerine and water. Fraudulent therapeutic claims.—[N. J. 19859; May, 1933.]

Nash's Rheumatism Remedy and Kidney Invigorator.—S. Nash & Co., Scarsdale, N. Y. Composition: Essentially volatile oils (92 per cent), such as turpentine and cajuput, resins and a trace of an alkaloid. Fraudulent therapeutic claims.—[N. J. 19866; May, 1933.]

Jo-Vex.—Jo-Vex Chemical Products Co., St. Louis. Composition: Essentially chloride of lime, with chlorine and water. For carbuncles, eczema, hives, etc. Fraudulent therapeutic claims.—[N. J. 19869; May, 1933.]

Penetrating Liniment.—White Purity Products, Washington, D. C. Composition: Alcohol (46.7 per cent by volume), chloroform (5.61 minims per fluid ounce), methyl salicylate, boric acid, distilled witch hazel extract and water. Misbranded as to alcohol content; fraudulent therapeutic claims.—[N. J. 19871; May, 1933.]

Robene.—E. I. Runner Co., Inc., Wheeling, W. Va. Composition: Essentially volatile oils including peppermint, camphor, methyl salicylate and thujia, with chloroform (71 minims per fluidounce) and alcohol (61 per cent by volume), colored with a green dye. For rheumatism, bunions, swollen feet, etc. Misbranded as to alcohol content; fraudulent therapeutic claims.—[N. J. 19878; May, 1933.]

Raysol Water.—Raysol Inc., Cincinnati, Ohio. Adulterated because below professed standard as an alleged radium water and misbranded because of false and misleading claims as to radium content.—[N. J. 19880; May, 1933.]

Cacodyne Tablets.—Girard Pharmacal Co., Philadelphia. Adulterated and misbranded because of false and misleading claim that each tablet contained 2 grains of acetanilid, which it did not.—[N. J. 19886; May, 1933.]

Kreitzer's Salve.—Aschenbach & Miller, Inc., Philadelphia. Composition: Essentially a lead soap, camphor, rosin, in a fatty base. For boils, carbuncles, tumors, erysipelas, etc. Fraudulent therapeutic claims.—[N. J. 19887; May, 1933.]

Sinaspra.—Sinasptra Corporation, Columbus, Ohio. Composition: A small amount of ephedrine, with glycerine and water. For sinus troubles, etc. Fraudulent therapeutic claims.—[N. J. 19888; May, 1933.]

Ma Burns' Liniment.—Ma Burns' Liniment Co., Boston. Composition: An emulsion containing turpentine oil, uncombined ammonia (8.8 per cent) and water. Fraudulent therapeutic claims.—[N. J. 19889; May, 1933.]

Pinkard's Sanguinaria Compound.—John Henry Pinkard, Roanoke, Va. Composition: Essentially extracts of plant drugs including sanguinaria, sugar, alcohol and water. For pneumonia, asthma, kidney, liver and stomach disorders, etc. Fraudulent therapeutic claims.—[N. J. 19890; May, 1933.]

Capsules Insulans.—Philadelphia Capsule Co., Philadelphia. For reducing blood sugars. Adulterated because insulin content was inert. Fraudulent therapeutic claims.—[N. J. 19892; May, 1933.]

Eson.—Pharmacy Products Inc., Wilmington, Cal. Composition: Essentially small amounts of carbolic acid and an iodine compound, with glycerine, alcohol (3.7 per cent) and water, colored with a red dye. For trench mouth, "athlete's foot," "feminine hygiene," etc. Fraudulent therapeutic claims.—[N. J. 19893; May, 1933.]

Mrs. Dinsmore's Balsam.—L. M. Brock & Co., Inc., Lynn, Mass. Composition: Essentially an antimony compound, such as tartar emetic, with extracts of plant drugs, alcohol, sugar and water. For coughs, hoarseness, whooping cough, etc. Fraudulent therapeutic claims.—[N. J. 19897; May, 1933.]

Wiley's Alcoholic Extract of Cod Liver Oil.—Hance Bros. & White, Inc., Philadelphia. Composition: Essentially compounds of phosphorus, iron, manganese, lime, potassium, quinine and strychnine, extracts of plant drugs, sugar, alcohol and water, flavored. For tuberculosis, scrofula, nervous prostration, etc.—[N. J. 19900; May, 1933.]

Capsules Phenammo.—Philadelphia Capsule Co., Philadelphia. Composition: 2.363 grains acetphenetidin in each capsule. For dysmenorrhea and influenza. Adulterated and misbranded. Fraudulent therapeutic claims.—[N. J. 19892; May, 1933.]

Narco Syrup of Hypophosphites.—Hance Bros. & White, Inc., Philadelphia. For tuberculosis, nervous disorders, etc. Fraudulent therapeutic claims.—[N. J. 19900; May, 1933.]

Correspondence

"PERNICIOUS ANEMIA AND TUBERCULOSIS"

To the Editor:—On reading Dr. Moses Barron's article in *THE JOURNAL*, May 20, one is left in doubt as to whether the conclusions reached in this study contribute as much to the consideration of this question as could be expected. Dr. Barron does not tell the number of tuberculosis cases present in this series of over 16,000 postmortem examinations, nor does he tell how careful a search was made to determine the actual existence of pernicious anemia in all the bodies examined. It is obvious, however, that over 2 per cent of the bodies examined and found to have pernicious anemia also showed active tuberculosis. It would be of value to know whether more than 330 cases of active tuberculosis were encountered in the whole series. One would like to know just what the incidence of pernicious anemia is in the general run of patients encountered in the general population, and there should be some comparison of the sort by which to gage one's studies. All are aware of the fact that many tuberculous patients having profound anemia are regarded as having that anemia secondary to tuberculosis. Undoubtedly there should be an effort made to encourage more careful blood studies in patients ill of tuberculosis. It is also possible that the forced feeding, administration of various tonics, heliotherapy and other factors contribute to the suspected paucity of pernicious anemia observations in connection with tuberculosis. During the period covered by Dr. Barron in which he observed two patients in his private practice showing both tuberculosis and pernicious anemia, my own observations have included at least three well established cases of this kind, one including the first case cited by Dr. Barron and seen with me in consultation, all three of these showing very chronic pulmonary tuberculosis. In this connection, it is well to bear in mind that pernicious anemia is usually more chronic in its course than tuberculosis, and these patients, such as the one cited, might die of tuberculosis before the pernicious anemia has run a very prolonged course. Dr. Barron's conclusions entitled 1 and 2 appear to be in conflict, and it is obvious that all conclusions with reference to the coexistence of the two diseases will be in conflict as long as the studies are incomplete, which they apparently are at the present time. I am inclined to agree with Dr. Barron in conclusion 2 with certain limitations. The other conclusions do not seem to be of value. At least, Dr. Barron has called attention to a condition which has interested many people who see much tuberculosis.

ALEXANDER JOSEWICH, M.D., Minneapolis.

[The letter was referred to Dr. Barron, who replies:]

To the Editor:—Dr. Josewich feels that the results were not as conclusive as might be desired. Unfortunately, no more dogmatic conclusions can be properly arrived at with the type of material under discussion. The thesis presented in the paper is that, from careful search in the literature together with the study of a large series of postmortem records, a combination of active tuberculosis, especially pulmonary tuberculosis, with pernicious anemia is exceedingly rare. All the available literature confirms this stand. As to the number of tuberculosis cases in this series, I have not the exact record, but in a study of 12,000 of these 16,000 cases there were found 318 cases of

tuberculosis, which would approximate a total number for the 16,000 cases of about 475. Obviously an effort should be made to encourage more careful blood studies, but this should be done not only in tuberculous patients but in other patients as well.

I do not agree that the special tuberculous regimen of tonics, heliotherapy and forced feeding can explain the low incidence of pernicious anemia with tuberculosis. Certainly, since the work of Whipple, Minot and Murphy and his co-workers it has been established that more specific management is necessary to obviate pernicious anemia. I am interested in the statement that Dr. Josewich has seen three cases of this rare combination. Dr. H. Z. Giffin, in the discussion of this paper a few months ago, stated that he had gone over all the pernicious anemia case records of the Mayo Clinic and did not encounter a single case of active tuberculosis coexisting with pernicious anemia. This in itself would emphasize the rarity of such a combination. I do not believe that my conclusions 1 and 2 are in conflict. They simply state that active pulmonary tuberculosis and pernicious anemia rarely occur together but that whenever they do coexist the course of one does not seem to be modified by the other. I am unable to find any facts or proofs brought forth in the letter that invalidate in the slightest degree any of the conclusions arrived at in the paper.

MOSES BARRON, M.D., Minneapolis.

THE PROBLEM OF THE SNELLEN SYMBOL

To the Editor:—The report of the Committee on Compensation Tables for Eye Injuries (*THE JOURNAL*, July 22) indicates anew the lack of unanimity in appraising loss of visual efficiency, and likewise an apparent disinclination on the part of physicians and insurance carriers, as well as of the various industrial boards, to accept the method of evaluating the Snellen symbol approved by the committee.

The crux of the problem is, of course, the correct interpretation of the value residing in the Snellen visual symbol. Numerous tables of values purporting to offer the solution of this phase of the subject have made their way into print at different times. In this connection it may be said that any method of determination which evolves from premises inexact by their nature cannot but lead, however ingeniously and mathematically, to an inaccurate, unsatisfactory conclusion.

Investigation of this question, some years ago (Gabriels, J. A. C.: The Snellen Symbol and Visual Value, *Arch. Ophthalm.* 55:447 [Sept.] 1926) proved that the method of evaluating the Snellen symbol is as simple as the principle of Snellen test type construction and led to the conclusion that, properly to measure the value of vision on the basis of the Snellen test type, the essential character of monocular vision itself need only be borne in mind. Briefly, this then entails, in the first place, the recognition of a figure of more than one dimension, and hence one's concern is here not with the dimensions themselves but rather with the surface area corresponding. Now, the unit of surface being a square, its area is equal to the square of one of its dimensions. Given this linear unit, i. e., the visual angle or its equivalent in Snellen formula, and the corresponding unit of surface is easily deduced.

Secondly, it is essential to recognize that these Snellen formulas are inherently fractional units. Representing the relation or ratio of two numerical values, the Snellen formula 20/20, for instance, involves a relation or comparison of 20 to 20 feet, or one to one, or unity; Sn 20/30, 20 to 30 feet, or two thirds, unity being here 30/30, and not, as has been contended, 20/20; Sn 20/40, 20 to 40 feet, or one half, unity corresponding to 40/40, not 20/20; and so on. Subdividing, as they do, the unit of standard value, these Snellen formulas are merely expressions denoting one or more aliquot or equal parts of this unit of

standard value. It is quite evident that 20/30, 20/40 and so on are not aliquot or equal parts of unity represented by 20/20, but rather as expressed in 30/30, 40/40 and so on, respectively. And it may be noted, also, that the subtending angle remains unchanged—in other words, the 30 foot object at 30 feet, the 40 foot object at 40 feet, and so on, subtends an angle of 5 minutes of arc, just as in the case of the 20 foot object at a distance of 20 feet.

To ascertain for each Snellen symbol the equivalent visual angle in minutes of arc, one has simply to divide the denominator of the fractional unit by 4; that is, the corresponding angle in minutes of arc is always one fourth.

This method is simple and scientifically sound, has the advantage of flexibility, permitting varying sizes of test types and distances, and is adapted to rapid calculation. Furthermore, it lends itself admirably to universal usage, because it is intelligible not only to the general physician but also to the layman himself, and its resulting ratings are, moreover, characteristically in alinement with the mental conception of ophthalmologists as to the values attaching to the Snellen visual symbol.

J. A. C. GABRIELS, M.D., Albany, N. Y.

EFFECTS OF METHYLENE BLUE ON CARBON MONOXIDE POISONING

To the Editor:—In an article on the effects of methylene blue in carbon monoxide poisoning, Haggard and Greenberg (*THE JOURNAL*, June 24, p. 2001) made the following statement relative to my controls:

It is noteworthy that in these observations of Brooks the control rats were not injected even with saline solution.

Attention is called to the fact that these controls were made, as stated in the *American Journal of Physiology* (102:147 [Oct.] 1932) as follows: "Ringer-glucose injections alone had no effect on the time of recovery."

It might be explained that Ringer-glucose is a saline solution.

MATILDA MOLDENHAUER BROOKS,
University of California, Berkeley, Calif.

PERCENTAGE OF POSTMORTEM EXAMINATIONS OF HOSPITALS

To the Editor:—Dr. Reginald Fitz (*THE JOURNAL*, July 22, p. 253) properly calls attention to the necessity and possibility of each hospital maintaining a high postmortem percentage. When autopsies are few, scientific morale is likely to languish and the care of patients becomes routinized. Dr. Fitz mentions the case of the Philadelphia General Hospital, an institution of 2,000 beds which I had the honor to direct for a decade and a half. There, a percentage of 10 rapidly mounted to 55 when postmortems were seriously sought. At the Jewish Hospital, Philadelphia, an institution of 400 beds, an autopsy percentage of 10 in the course of two months of endeavor rose to 50 and has ranged from 40 to 70 during the several months of the year, averaging in excess of 50 for the twelve months.

The sole responsibility of securing postmortem permissions should not be left to the pathologist. The clinical staff should be, if possible, even more interested. At the institution last mentioned, a weekly conference at which the whole intern and resident staffs are in attendance is perhaps the most effective measure in securing autopsy permissions. At this meeting the clinical and pathologic aspects of each institutional death during the week are thoroughly discussed. When no autopsy has been secured, the reasons for this failure are sought. Competitive lists of percentages for interns, visiting physicians and departments are prepared and posted monthly. There is no geographic, racial or economic excuse for a low autopsy percentage. Lack of interest or of information as to the proper methods to employ are alone causative. JOSEPH C. DOANE, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MARRIAGE IN CRETINISM AND THYROID IN PREGNANCY

To the Editor:—In *THE JOURNAL*, April 8, page 1132, in answer to a query concerning marriage in cretinism, the statement is made that during pregnancy the patient might need less thyroid when the fetal thyroid begins to assume its function. I should like to have the one who wrote the answer cite the clinical or experimental reports on which this statement is based. The baby's thyroid must be considered as well as that of the mother. In 1896, Halstead (*Johns Hopkins Hosp. Rep.* 1: 373) found that, if the thyroid of a pregnant female dog was removed, the puppies were all born with goiters. In a study of goiter, which was quite extensive, a few years ago, I found that in those families in which practically all the children had goiters the mother had a thyroid which, if not somewhat deficient at all times, was deficient during her pregnancy. I found further that, if these mothers were given desiccated thyroid so as to maintain the basal metabolic rate at the normal for a pregnant woman, they gave birth to children without goiters, confirming in the human being the work of Halstead.

It is true that a woman with a thyroid deficiency may have a slight rise in the basal metabolic rate sometimes as the pregnancy progresses. It will be found that the basal metabolic rate of a pregnant woman should steadily rise during the pregnancy to not far from plus 20 at the time of delivery, and many consider it not abnormal if it rises to plus 30. By comparing the metabolic rates in the women who have some thyroid deficiency with the normal it will be found that, practically always in those cases in which there is a rise, the rise is not in proportion to the normal rise that the women should have. I have followed a considerable number of women with either primary basal metabolic rate deficiency or a secondary deficiency developing during pregnancy, and by giving desiccated thyroid and controlling the dose with repeated basal metabolic rates I have seen these women deliver babies with a normal thyroid without a single exception. If the basal metabolic rate is not controlled by the repeated determinations, they are apt to get too much or not enough of the desiccated thyroid. I am advising in this group of cases that the basal metabolic rate be taken at frequent intervals and sufficient desiccated thyroid given to maintain the rate for a normal pregnant woman, month by month, as the pregnancy goes on. At the time of delivery I aim to have the rate between plus 15 and plus 20.

J. EARL ELSE, M.D., Portland, Ore.

ANSWER:—The belief that the endocrine glands of the fetus function during pregnancy is held generally, and that they may make up some deficiency of the mother's glands also has many supporters. Carlson, von Noorden and Holzbach (*Zentralbl. f. Gynäk.*, Oct. 9, 1926, p. 2610) try to explain the occasionally observed improvement in diabetic patients in the last trimester of pregnancy on this ground. Halstead's experiment tends to prove this action for the thyroid gland, and many years ago a surgeon connected with one of the meat packing industries in Chicago said he had observed conditions in slaughtered cattle which indicated to him that the thyroid of the fetus acted vicariously for that of the mother. Ukita (*Acta scholae med. univ. imp. Kioto* 3:287 [Sept. 1] 1919, abstr. *THE JOURNAL*, Jan. 17, 1920, p. 213) and Carlson and Drebin of Chicago showed that the thyroids of rabbit and dog fetuses from thyroidectomized mothers were enlarged, but the signs in the fetuses pointed as often to cretinism as to hyperthyroidism.

On the other hand, in cases of struma coincident in mother and child one might also think that the fetal struma was hereditary, not the result of unbalanced exchange of thyroxine or whatever incretions cause enlargement of the thyroid.

In strumigenic districts, both mother and fetus may show the effects of the environment.

In pregnancy, enlargement of the thyroid may be colloid only. White and Melchoir (Halban-Seitz 8:732) found that children of mothers with exophthalmic goiter sometimes had struma congenita.

Since it is known that the thyroid is under the influence of other endocrine glands, particularly the hypophysis, and since the actions of the incretions of the thyroid are not fully understood, it is somewhat premature to draw hard and fast lines governing treatment. Further, the basal metabolic rating is not an infallible guide in treatment.

Cornell and Baer have found that during pregnancy the basal metabolism rate may go to 35 plus normally, but at the University of Chicago Sandiford found no differences from the non-pregnant state. But the test is the best single one available and in the cases of cretinism during pregnancy ought to render valuable service, if not absolute conviction.

It is easy to give overdoses of thyroid during pregnancy. In the early months the dose heretofore found needful may be continued. Then if the basal metabolism rate shows that the normal increase is not taking place—that the mother's

thyroid is not meeting the demands of pregnancy—the dose may be augmented. On the other hand, it may happen that pregnancy will stimulate a torpid gland and less medication will be required. Should in any case the basal metabolism rate exceed 20 plus, the danger of overstimulating the baby's as well as the mother's thyroid would be an indication to lessen the amount of thyroid administered.

LUPUS ERYTHEMATOSUS

To the Editor:—What is the best treatment of lupus erythematosus? Of what value is gold sodium thiosulphate in the treatment of this condition? What are the most important diagnostic criteria in this condition? Are fine, white scales and pruritus likely to occur? In what conditions is the butterfly pattern on the face apt to occur? Are discrete nummular areas likely to be found at the periphery of the area of involvement? Are the auricle and external auditory canal liable to become involved? Please omit name.

M.D., Connecticut.

ANSWER.—The best treatment for lupus erythematosus depends on the patient. What benefits one may harm the next one. Gold sodium thiosulphate is the gold salt used more than any other in this country, and gold salts are used at the present time more than any other treatment for lupus erythematosus. Their value depends largely on the physician's ability to judge when they are indicated, to choose the proper dosage and to take precautions against complications. They are most useful in the common discoid form of the disease, of which the following are the most important diagnostic criteria:

1. Flat papules, sometimes macules, enlarge peripherally and become covered with adherent gray scales. When the scales are removed they leave pits like enlarged follicles in the skin, and on the under side of the scale are horny pegs corresponding to these pits.

2. On further development of the lesion, atrophy appears at the center without any ulceration. Sometimes traces of the pits can be seen in the scar.

3. On the nose, patches of small gray scales, plugging pits, give a rough, stippled appearance.

4. On the scalp, similar lesions develop central scars, often surrounded by a stippled zone. These are usually small.

5. The distribution is on the face, scalp, neck and ears, less often on the backs of the fingers and the center of the upper chest, in approximate symmetry.

Fine white scales are seldom seen. Pruritus may occur with the onset of new lesions or the exacerbation of old ones but is not a common feature. The butterfly pattern is characteristic for the discoid form of lupus erythematosus and for acne rosacea, though in the latter involvement of the glabella and the chin often make a cross-shaped figure. Lupus vulgaris that begins at the center of the face and progresses equally on the two sides may produce a butterfly-shaped patch, or tertiary syphilis under the same conditions may do it.

Discrete nummular lesions may occur near the border of a large patch but are no more likely to be found there than in more distant parts. They are larger than the lesions of lupus vulgaris, which characteristically occur beyond the edge of the main patch, and they enlarge by peripheral extension, merging with the larger patch and forming a coarsely gyrate figure in lupus erythematosus. The lupus vulgaris patch enlarges only by inclusion of small lesions at the border.

The auricle is commonly involved in lupus erythematosus and the process may extend to the auditory canal.

BELL'S FACIAL PALSY

To the Editor:—A woman, aged 26, weighing 104 pounds (47 Kg.), has been suffering from what appears to be Bell's palsy on the right side of the face for the past four months. She has no other complaints except this distressing and ugly condition. Her teeth are in good shape and there are no foci of infection apparently present. Would you give some information as to the causation of this condition, the prognosis and treatment, medical and electrical? Please discuss in detail the electrical treatment, if of any definite value, and internal medication, if of any definite value. Kindly omit name.

M.D., New York.

ANSWER.—Bell's palsy is sometimes associated with focal infections but also occurs from infections that sometimes seem to be epidemic. Rarely, this condition has been reported in association with syphilis. The outlook for more or less complete recovery is usually good. The acute inflammation is of short duration and the damage is done before the patient comes under observation. Recovery depends on the regeneration of the fibers of the nerve. Treatment must be directed toward maintaining the nutrition and functional capacity of the muscles and avoiding contractures while the process of regeneration is taking place. Stimulation of the muscles seems also to have some influence in promoting regeneration of the nerves. The

most important measures are those of massage and electrical stimulation, though efforts have been made also to provide some form of splinting to prevent deformity of the face. The form of electrical stimulus to use is that which causes contraction of the muscles. Unless the damage is mild, when it will recover rapidly, the nerve itself is inexcitable to any stimulus. The muscle fibers as a rule are not affected by the faradic or interrupted current. As recovery of the nerve develops, excitability to faradism will return. The current to be used is the constant or galvanic current, applied directly over the individual muscles. If this fails to cause contraction of the muscles, it means that the muscles themselves are undergoing degeneration. In using the galvanic current, it is well to apply the anode over the muscle points; contraction is caused by alternately making and breaking the circuit, only sufficient current being used to cause contraction. Each muscle must be treated separately. Starting with five or ten minutes, the treatments may be continued for the muscles as a whole to about twenty minutes at a sitting, two or three times a week. Too prolonged treatment may do harm by causing fatigue. Massage may be given daily.

"CAR SICKNESS"

To the Editor:—A woman, aged 29, with no organic lesions of any kind, is unable to do any traveling. As soon as she gets on a street car or bus or into an automobile or railroad train, she becomes dizzy and then nauseated and starts vomiting. She has tried many things to overcome it but without effect. This disturbance began five years ago, while she was pregnant, and has continued ever since. She has had no pregnancies since. What can be done to relieve her? Are there any recent reports about cases of this type? Omit name, please.

M.D., Illinois.

ANSWER.—This condition, known as "car sickness" or "train sickness," is generally ascribed to the necessity for rapid ocular adjustments, as well as some labyrinthine disturbance. It is symptomatically best treated by reclining, with the eyes closed. As it is commonly induced by errors of refraction, especially forms of astigmatism, causing unequal strain of muscular balance, proper correction of the eye disturbance should go quite a way toward relieving the trouble in a more radical manner. It is probable that there is back of all this a neurosis, vertigo being a not uncommon symptom in the "anxiety neurosis." Like all neuroses, this one is probably due to a wrong mode of living and, to correct it, determination of what is wrong in the patient's hygiene of life is the prime necessity. The history suggests that, in the case reported, this may be found in the sex life of the patient.

HAZARDS OF ACETYLENE WELDING

To the Editor:—I have a patient who complains of headaches, vertigo, and a choking sensation in the throat. He has pain, tenderness and swelling over the sternocleidomastoid muscle and the biceps brachii muscle on the left side. There is a tremor and evidence of myasthenia present in these muscles. The skin over them is analgesic and scaling. Two years ago the patient had the same syndrome on the right side and states that it went on to actual paralysis. He works in a machine shop next to an acetylene welder. What poisons are present in a room where acetylene welding on metals is being performed? Can acetylene gas or any sulphur compound cause this syndrome? Is there any state agency that investigates and corrects injurious working conditions? How would you treat such a case? It was diagnosed as multiple neuritis by a physician two years ago. I will greatly appreciate any advice you offer. Please omit name.

M.D., Illinois.

ANSWER.—To some extent the hazards of acetylene welding depend on the particular metals being manipulated. The burning off of a coating of zinc (galvanizing) with an acetylene torch, in connection with welding work, readily may give rise to acute zinc poisoning. The "burning" of lead battery parts (not precisely a welding operation) with an acetylene torch might occasion lead poisoning. Still other metals so treated may produce their characteristic form of poisoning in exposed workers.

Acetylene itself is regarded as nontoxic, except as a simple asphyxiant. However, it may contain as impurities hydrogen sulphide or other sulphur compounds—arseniureted hydrogen—and, in the process of application, carbon monoxide may be produced.

"Headache, vertigo, and a choking sensation in the throat," are common results of exposure to gases and fumes arising from acetylene welding. The welder is the worker usually affected.

It is conceivable, but not probable, that the severe damage described in the query might be traced to arsenic as the cause, possibly to lead, and remotely to carbon monoxide. It is far more likely that these manifestations are unrelated to work as a direct cause. Responsibility for the investigation of industrial

hazards does not in all states devolve on the same department. An inquiry addressed to the state department of health may be expected to establish the source of investigative services.

Treatment largely will be determined by the cause of the disorder. Until a precise causative agent is determined, treatment appropriate for multiple myositis or neuritis is probably indicated.

NEGATIVE WASSERMANN TESTS IN SYPHILIS

To the Editor:—In the March *Bulletin of the Academy of Medicine of Cleveland* there appears the following statement: "About half the cases of syphilis seen by the average clinician present themselves with negative Wassermann credentials and have to be recognized by other means or go undetected." I believe the average clinician sees relatively few early primary syphilitic lesions before the Wassermann and Kahn tests are positive. I assume, therefore, that the writer of the statement believes that syphilis in its later stages is excessively common with a negative Wassermann reaction. Is this true? Is the Wassermann test positive in only 50 per cent of the cases of syphilis?

RICHARD E. STIFEL, M.D., Cleveland.

ANSWER.—Considering only late syphilis, there are certain cases more prone than others to present negative blood reactions. Among them are the late congenital cases, late bone syphilis, cardiovascular syphilis and tabes dorsalis. In these, 40 per cent of negative blood Wassermann reactions seems to be generally accepted by syphilologists as high enough. These cases represent, however, only part of late clinical syphilis. In tertiary skin cases, for instance, the percentage of negative blood Wassermann cases is much lower, not over half this figure. Add to this fact the large number of clinically undetectable latent cases in which the only evidence of disease is a persistently positive blood Wassermann or positive spinal fluid test and the statement is weakened still further. While the writer quoted may have exaggerated, his point is a good one: clinical observation is more important in diagnosis than serologic tests and they should not be neglected because the serologic tests are easier.

APHTHOUS STOMATITIS AT MENSTRUAL PERIOD

To the Editor:—A married woman, aged 25, develops an aphthous stomatitis just prior to the menstrual flow each month. The aphthae appear on the inner side of the lips, on the cheeks and on the hard palate. They are for the most part about 0.5 cm. in diameter. They are usually present about three or four days and heal before the menstrual flow ceases. I have not been able to find any connection in the literature between menstruation and aphthous stomatitis. Can you give me any information and can anything be done to prevent the recurrence from month to month?

W. P. CRANE, M.D., Holstein, Iowa.

ANSWER.—There is a distinct connection between the female genital functions and the mouth. Occasionally, at puberty in girls between 12 and 14 years old, edema and swelling of the gums occur. This results in loosening of the teeth and in some instance even to a moderate periostitis. These manifestations disappear spontaneously with the onset of the menstrual flow. More frequent, however, are the changes that occur in the mouth during normal or abnormal menstruation. Some women can predict the onset of menstruation because they experience toothache regularly just before they begin to bleed. These aches may persist during the flow, but they always subside with the cessation of bleeding. Cases of catarrhal and aphthous stomatitis have been described by Scheff (*Handbuch der Zahnheilkunde*, ed. 3, Vienna, 1910). A case is reported by Davis (*Medical Times*, May, 1898) in which a woman, aged 35, experienced a stomatitis for three years. The symptoms appeared five days before the onset of the menstrual flow and increased until the end of the bleeding. A cure was obtained by removing both ovaries, which were cystic. This is heroic therapy for a woman only 35 years old and is entirely unwarranted. Unfortunately, no certain way to prevent the monthly recurrence of aphthous stomatitis is known other than by eliminating ovulation.

CEREBRAL ARTERIOSCLEROSIS IN A DIABETIC PATIENT

To the Editor:—A man with diabetes has a cerebral irritation causing his leg and arm to draw up or jerk at times. My opinion is that some calcification of the cerebral arteries exists, as at times the pressure goes up to 170 systolic. Moderate dieting keeps the urine sugar free. My question is whether by increasing carbohydrates, using insulin, I could reasonably expect the disagreeable jerks to diminish.

W. H. CAISE, M.D., Antwerp, Ohio.

ANSWER.—Granting that the patient has a sclerosis of the cerebral arterioles, with a cerebral irritation causing the leg and arm to jerk, this has no necessary relationship to the diabetic state, except so far as the latter condition might have

advanced the vascular disease. There is, therefore, no reason for expecting that an increased carbohydrate intake, with the use of insulin if necessary, would modify the cerebral condition. However, in view of the fact that the ketogenic diets have successfully been used to decrease the cerebral irritability in such conditions as epilepsy, it might be possible to treat both the diabetes and the cerebral manifestations by the use of a high fat diet. Should this treatment be adopted, it will be necessary to watch the patient carefully to avoid the dangers of excessive ketosis. And if, as seems likely from the question, the patient is an elderly person with cardiovascular disease, the restriction of carbohydrate in the diet may have a deleterious action as regards the functional state of the heart (Soskin, Samuel; Katz, L. N.; Strouse, Solomon, and Rubinfeld, S. H.: Treatment of Elderly Diabetic Patients with Cardiovascular Disease, *Arch. Int. Med.* 51:122 [Jan.] 1933. Strouse, Solomon; Soskin, Samuel; Katz, L. N., and Rubinfeld, S. H.: Treatment of Older Diabetic Patients with Cardiovascular Disease, *THE JOURNAL*, May 14, 1932, p. 1703). In deciding on a course of action, therefore, the discomfort or disability caused by the cerebral irritation should be carefully weighed against the difficulties and possible dangers of a high fat diet in the type of case described.

TREATMENT OF SYPHILIS AND SYPHILOPHOBIA

To the Editor:—A man, aged 23, attempted suicide. He was being treated for gonorrhea and felt that there was no cure. He has a watery discharge from the nose of about two months' duration, "stomach trouble" which he cannot describe satisfactorily other than as an indefinite rumbling, and what is apparently a water brash coming into his mouth, a condition which he attributes to abnormal sexual acts. He is absolutely convinced that his case is incurable and that he has been responsible for infecting also his wife, his 4 year old daughter and both of his parents, with whom he has been living. He has a four plus Wassermann reaction. Other than these obsessions and an extremely morose attitude, there are no mental symptoms. His memory, reasoning and mental ability are otherwise normal. I have made a diagnosis of acute syphilis and syphilitic meningitis. I am treating him with mercury rubs and potassium iodide and bismuth sodium tartrate intramuscularly every two days. I am withholding all forms of arsenic at this time. He has shown no improvement in spite of the fact that his nose and throat have been examined by a specialist and found to have nothing wrong. There is absolutely no other abnormal physical finding. Do you agree with my diagnosis and, if so, what would be your prognosis and what change in treatment would you recommend? Please omit name and address.

M.D., New York.

ANSWER.—From the facts presented there seems little justification for assuming that this patient has either neurosyphilis or syphilitic meningitis. The diagnosis of the latter is made largely from spinal fluid examinations, particularly excessively high cell counts, and there is nothing in the behavior of the patient to point necessarily to a syphilitic involvement of the brain. Exactly similar mental states are seen in the presence of syphilophobia, in which every clinical and serologic investigation proves that the patient is not the victim of the infection but simply has an overpowering fear of such an infection.

In view of the treatment that has already been instituted, it seems unnecessary to withhold arsphenamine, as the present conception of the treatment in syphilis demands that arsphenamine be part of the treatment schedule. It is suggested that a spinal fluid examination is in order and that the patient's treatment be intensified by the addition of an active arsphenamine.

DETECTIONS OF SOURCE OF HAIR

To the Editor:—Owing to a peculiar angle of a murder case, the question of hair is involved. The hair that will be offered in evidence, it is claimed, came from a horse's ankle. This hair compared in color to the hair of the dead man. Is there any way, with the exception of taking the hair from the head of the deceased and comparing it with a hair from the ankle of the horse, to tell which is which? In other words, is there any way to distinguish horsehair from human hair? Please omit name.

M.D.

ANSWER.—The examination of hairs for medicolegal purposes is accomplished by the use of the compound microscope, and the observations should be substantiated by photomicrography or picture taken through the microscope. By this method it is possible to distinguish and identify the different types of hair of the entire animal kingdom.

Human hair cannot be confused with any hair from the lower animals, and each of the types of animals may be separated one from another by this process.

In a case in which a shaft of hair is suspected to have come from a certain animal, it is a simple matter to prove the fact by securing hair from that animal and submitting it to microscopic examination. It must be borne in mind that there are different kinds of hair on the four-footed animals; i. e., whiskers,

tail, mane, inner and outer body-hair. The inner hair is the wool hair and the outer hair the protective hair. These facts are mentioned in order that care may be exercised by those who secure specimens for comparison purposes.

A good microscopist should be consulted in the matter and enlarged photomicrographs should be prepared for presentation in court. The total magnification should be at least 400 diameters.

USE OF SCARLET FEVER ANTITOXIN

To the Editor:—I have a few cases of scarlet fever and wish to know about the Dick serum for prevention and cure of scarlet fever. It is stated here that it is no good. Where can I get it if it is all right? Please answer at once.

J. O. HELM, M.D., New Florence, Mo.

ANSWER.—Since scarlet fever antitoxin was described in 1924 there have been published many reports concerned with clinical results obtained from the use of this antitoxin. The various authors agree that antitoxin is of definite value in the treatment of scarlet fever. It not only combats the toxic element of the disease but, if given early, reduces complications. The effect of administration of antitoxin is most marked in severe cases, but Hunt found in a series of 848 mild cases of scarlet fever that the incidence of complications was reduced by two thirds through administration of antitoxin. In a series of more than 2,000 cases the same author found there was a definite relation between the time of administration of the antitoxin and the incidence of complications, complications being fewest in the cases in which the serum was given on the first day of the disease.

SYMPTOMS OF X-RAY BURNS

To the Editor:—A colleague of mine who does considerable x-ray work complains of his hands. There is no dermatitis or other visible evidence of trouble but he says that his fingers burn or tingle and at times feel numb. Please advise me whether this sounds like any serious x-ray burns.

M.D., Virginia.

ANSWER.—While it is usually accepted that an erythematous reaction precedes structural tissue changes, it is also a fact that hyperesthesia, itching, pigmentation, loss of hairs and brittleness of the nails might result from repeated, even though small exposures to the x-rays. The symptoms described should be regarded with suspicion; also other possible causes for similar symptoms should be considered.

CHAPPING AND PEELING OF LIPS

To the Editor:—Of what diagnostic significance are chapped and peeling lips in a young woman whose only other sign of any note is a sterility over a period of ten years?

M.D., Wisconsin.

ANSWER.—Chapped and peeling lips in a young woman with sterility are of no diagnostic significance. It may be a simple dermatitis due to sensitization to some chemical ingredient in a lip stick, tooth paste or mouth wash. It might also be an actinic cheilitis from the effects of wind and sun. So-called cheilitis exfoliativa is essentially a form of seborrheic or exfoliating eczema of the lips.

"PELVIC PAIN DURING COITUS"

To the Editor:—There has been a long standing fallacy of medicine to arrive at medical diagnosis in certain instances by a process of excluding other possible diagnoses, and this has been particularly the case in concluding the presence of minor psychoses, such as hysteria and neurasthenia, in explanation of internal medical symptoms of obscure causation. This method of diagnosis, on the one hand, assumes too complete adequacy of scientific knowledge and examining techniques for the conditions excluded and, on the other hand, implies that there are no positive signs for the pathologic state which is by exclusion blamed for the symptoms. The process of exclusion undoubtedly has its place in diagnosis, but the difficulty is that it has been resorted to so blindly and has been so soothing to the baffled diagnostician that psychiatrists are constantly having to undo these diagnoses and to apologize whenever on a legitimate basis the diagnosis of hysteria or neurasthenia is made. It would be helpful to the scientific advancement of all the fields concerned if in *Queries and Minor Notes* THE JOURNAL could be particularly critical of replies that employ this process of diagnosis by exclusion. The frequency with which psychiatric problems enter this column is a reflection of the inadequacy of the preparation of physicians in psychiatry, and it is my feeling that anything that can be done to deprive the physician of the use of neuroses as a screen for diagnostic embarrassment will not only force a facing of unknowns but will bring about an appreciation of the fact that psychiatric diagnoses, just as those in any other sphere, rest on positive observations.

The occasion for this particular appeal is the query in THE JOURNAL, July 8, page 158—Pelvic Pain During Coitus.

GEORGE S. STEVENSON, M.D., New York,
Director, Division on Community Clinics,
National Committee for Mental Hygiene.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Boston, Sept. 19. Sec., Dr. Wm. H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*, Boston, Chicago, Cleveland, New York, Philadelphia, St. Louis and San Francisco, Oct. 28. *Oral*, New York, Dec. 15-16. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B Candidates)*. The examinations will be held in various cities of the United States and Canada, Dec. 9. Application necessary before Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Boston, Sept. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: Phoenix, Oct. 3-4. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

CALIFORNIA: *Regular*. Sacramento, Oct. 16-19. *Reciprocity*. Sacramento, Oct. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 3. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Oct. 14. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

GEORGIA: Atlanta, Oct. 10. Joint Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 3. Dir., Mr. F. L. Cruikshank, Boise.

ILLINOIS: Chicago, Oct. 17-19. Supt. of Regis., Mr. Eugene R. Schwartz, Springfield.

MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. J. E. McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Regular*. Minneapolis, Oct. 17-19. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 17-19. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: *Basic Science*. Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Dr. Charles Duncan, State House, Concord.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

RHODE ISLAND: Providence, Oct. 5-6. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

WISCONSIN: *Basic Science*. Madison, Sept. 23. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Florida June Examination

Dr. William M. Rowlett, secretary, Florida State Board of Medical Examiners, reports the examination held in Jacksonville, June 12-13, 1933. Forty-two candidates were examined, 40 of whom passed and 2 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1925)	82.4	
Howard University College of Medicine.....	(1929)	87.3	
Atlanta School of Medicine.....	(1912)	75.5	
University of Georgia Medical Department.....	(1930)	83.8,	
(1932) 85.6, (1933) 79.6			
Loyola University School of Medicine.....	(1933)	85.4, 85.7*	
Northwestern University Medical School.....	(1917)	81.3	
Indiana University School of Medicine....	(1921) 80.2, (1932)	81.8	
Tulane University of Louisiana School of Medicine....	(1915)	81.4,	
86.4, (1925) 83.4, (1929) 85.7, (1932) 84.6, 85.4,			
86.5, (1933) 85.5, 88.3			
College of Physicians and Surgeons of Baltimore.....	(1903)	75.3	
Johns Hopkins University School of Medicine.....	(1914)	84.8	
University of Maryland School of Medicine.....	(1912)	77	
Univ. of Maryland School of Med. and Coll. of P. and S.	(1930)	89.3	
Harvard University Medical School.....	(1932)	84	
Long Island College.....	(1884)	75	
Univ. of Pennsylvania.....	(1928)	82.3	
University of Pittsburg.....	(1920)	85.9	
Med. Coll. of the Stat.....	(1932)	83.5	
Meharry Medical College.....	(1935)	83.4	
Univ. of Tennessee College of Medicine.....	(1932) 78.2, 81.8,	86.7	
University of the South Medical Department, Tennessee.	(1908)	75	
Vanderbilt University School of Medicine.....	(1919)	84	
Medical College of Virginia.....	(1920)	87.6	
University of Toronto Faculty of Medicine.....	(1927)	88.3	
McGill University Faculty of Medicine.....	(1931)	87.9	

College	FAILED	Year Grad.	Per Cent
Georgia College of Eclectic Medicine and Surgery.....	(1893)	58.8	
University of Louisville Medical Department.....	(1898)	63.5	

* This applicant has completed his medical course and will receive an M.D. degree on completion of his internship.

Minnesota June Report

Dr. E. J. Engberg, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, June 20-22, 1933. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Thirty-six candidates were examined, all of whom passed. Two physicians were licensed by reciprocity and 1 by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Northwestern University Medical School.....	(1932)	82.1,	85.4
Tulane University of Louisiana School of Medicine.....	(1931)		89
Johns Hopkins University School of Medicine.....	(1931)		88.3
Harvard University Medical School.....	(1931)		87
University of Minnesota Medical School.....	(1932)		84
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Creighton University School of			86.5
University of Nebraska College			87.4
Ohio State University College o			90.1
University of Cincinnati College			83.1
University of Virginia Departme			90.4, 90.6
Marquette University School of Medicine.....	(1933)		84.5
University of Wisconsin Medical School.....	(1932)		88.2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Michigan Medical School.....	(1929)		Michigan
University of Nebraska College of Medicine.....	(1932)		Nebraska

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Minnesota Medical School.....	(1932)	N. B. M. Ex.	

*This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

Book Notices

Obstetrics and Gynecology. Edited by Arthur Hale Curtis, M.D.* Professor and Head of the Department of Obstetrics and Gynecology, Northwestern University Medical School. Volume I. Cloth. Price, \$35.00 per set of 3 volumes and Index. Pp. 1165, with 515 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

Obstetrics and Gynecology. Volume II: Pathology of Labor and of the Puerperium, Operative Obstetrics, Infectious Processes, Tumors. Edited by Arthur Hale Curtis, M.D., Professor and Head of the Department of Obstetrics and Gynecology, Northwestern University Medical School. Cloth. Price, \$35 per set of three volumes and Index. Pp. 1135, with 1103 illustrations. Philadelphia and London: W. B. Saunders Company, 1933.

The first two volumes of this system, which is to include eventually three volumes and a separate desk index, are now available. Eighty contributors, selected by the editor-in-chief, have given of their best for this work. The volumes begin with a historical account by Dr. Irving Cutter, tracing the development of obstetrics and gynecology from the earliest times and including some excellent brief biographic notes as well as numerous illustrations. There follows a consideration of the anatomy of the female genital tract, then a discussion of the physiology of the reproductive organs, and in the third section the morphology and physiology of pregnancy. Then the physiology of the birth process, labor, and the pathology of pregnancy complete volume I.

In the section on anatomy, the drawings represent the finest type of anatomic art and make clear the relationships of organs and tissues. The articles on menstruation by Novak are an excellent contribution, summarizing his numerous writings on this topic as well as the material available from the work of others. His summary of our knowledge of the physiology of menstruation indicates, however, that even this function is not as yet fully understood. Apparently, most gynecologists incline to view that the withdrawal of the corpus luteum influence is the responsible factor in bringing on normal menstrual bleeding, presumably by its content of *progesterin* and *folliculin*. Novak feels that folliculin is the most important inhibiting influence.

The consideration of the reproductive cycle in animals is a valuable chapter, but its immediate practical importance to the practitioner of gynecology and obstetrics is hardly apparent. The section on pregnancy gives a fine consideration of the embryo by Drs. Hartman and Patten, a most practical section for the medical student, with less emphasis on the development of the chick and lower species and with practically all the emphasis on the human embryo. Some exceedingly fine colored

illustrations enhance the value of this section. Special emphasis should be placed on the quality of the chapter dealing with the fetus, which seems to be perhaps the most complete thus far made available in books of this character.

Special emphasis is placed on the endocrinologic tests in the diagnosis of pregnancy. The advice on prenatal care is complete with statements relative to diet and actual outlines of suitable diets, and also with a good consideration of the newer knowledge of vitamins as applied to the diet during pregnancy.

The multiplicity of illustrations associated with the chapter on the conduct of labor makes it most useful for the general practitioner who needs first hand consultation in problems of this character. The discussion of the toxemia of pregnancy and of eclampsia is an adequate literary review of the available knowledge. There is an excellent index to this volume.

Volume II concerns the pathology of labor and of the puerperium, operative obstetrics, infections and tumors of the female tissues. The numerous contributors represent various sections of the country. Especially noteworthy is a history of American gynecology by Dr. Howard Kelly. Dr. Curtis himself contributes several chapters on the infections. Most of the chapters on operative obstetrics are by Dr. William C. Danforth, Herbert M. Little and Norris W. Vaux. Cesarean section is considered by Dr. H. J. Stander.

The second volume, like the first, is replete with illustrations especially made or selected for this work. Like all systems of knowledge in the medical field written by various authors, this one is marked by some inequalities. On the whole, however, the volumes bear evidence of careful selection, of careful editing, and of exceeding care on the part of the publisher.

Sammlung psychiatrischer und neurologischer Einzeldarstellungen. Herausgegeben von Prof. Dr. A. Bostroem und Prof. Dr. J. Lange. Band IV: Das persönliche Tempo: Eine erbbiologische Untersuchung. Von Dr. Ida Frischeisen-Köhler. Paper. Price, 5.50 marks. Pp. 63, with 10 illustrations. Leipzig: Georg Thieme, 1933.

The psychologist William Stern in 1900 made the suggestion that the speed at which an individual prefers to receive sensory impressions (for example, a musical melody) as well as the speed at which he engages most comfortably in activity are influenced to a considerable degree by a more or less constant "personal tempo" peculiar to each individual. Since then a number of other investigators (cited by Dr. Frischeisen-Köhler) have found evidence seeming to confirm this suggestion. In the investigation under discussion, Dr. Frischeisen-Köhler undertakes to determine the part played by heredity in the determination of this "personal tempo." The tests chosen for the investigation are (a) tapping experiments: (1) tapping with the finger on the table in whatever position the subject may choose, (2) tapping on the edge of the table with outstretched index finger and (3) tapping with the foot on the floor. In each of these tests the subject is asked to choose the speed of tapping that is most agreeable to him. (b) In a second group of tests the subject is asked to choose the rate of beating of a metronome (4) that is most agreeable to him or (5) that seems to the subject "neither slow nor fast." Dr. Frischeisen-Köhler finds that there is a high degree of constancy in the "tempo" of the same individual on different days in tests within the same group (i. e., either the group of tapping tests or the group of metronome tests). The tempo chosen for the metronome tends to be slightly slower than that for the tapping tests but does not show any marked divergence. On the other hand there are marked differences in tempo between different individuals in all the tests and these are much in excess of the differences in tempo of the same individual in different tests or at different times. The influence of age and of sex on the average "tempo" is found to be slight and not statistically assured. The influence of heredity on the personal tempo is investigated by a statistical comparison of the differences in tempo between enzygotic twins, with the corresponding differences between (1) fraternal twins, (2) brothers and sisters and (3) nonrelated individuals. Dr. Frischeisen-Köhler finds that the differences between enzygotic twins are not greater than the corresponding variations in tempo of one and the same individual. The differences in tempo between fraternal twins and between brothers and sisters are considerably greater than those between enzygotic twins but are much less than the average differences between the unrelated individuals. Hereditary influences, Dr. Frischeisen-

Kohler concludes must therefore play a large part in determining the "personal tempo." She is uncertain as to the laws according to which personal tempo may be inherited but suggests the possibility either of mendelian inheritance of two or more genes, with dominance of the more rapid tempo, or of inheritance of one gene without dominance.

Correction of Defective Speech: A Complete Manual of Psycho-Physiological Technique for the Treatment and Correction of the Defects of Speech. By Edwin Burket Twitmyer, Ph.D., Professor of Psychology and Chief of Corrective Speech Clinic, University of Pennsylvania, and Yale Samuel Nathanson, Ph.D., Instructor in Psychology and Assistant, Corrective Speech Clinic, University of Pennsylvania. Cloth. Price, \$3.50. Pp. 413, with illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1932.

This volume is presented by the authors as a complete manual of psychophysiological technic for the correction of the defects of speech. No attempt is made to apply the technic presented to the especial requirements of the many specific problems of voice and speech disorder. The book constitutes, as it stands, a manual applicable only to simple articulative problems. The book is written by professional psychologists, who have taken over educational therapeutic work in disorders of speech. The peripheral physiology of voice and speech production naturally constitutes the basis for the understanding of voice and speech psychology; and educational treatment of disorders of speech in their different aspects demands particularly a thorough psychophysiological knowledge of voice and speech production. To a medical audience this book is worth mentioning chiefly as an example of an unfortunate situation existing in the still youthful field of disorders of speech; namely, that the professional psychologist who enters the field too often fails to master the complex psychophysiology of the production of voice and speech. Not only are physiologic facts presented obscurely and even wrongly in this volume, but the entire arrangement of the book seems to be based on the confusing conception that physiologic knowledge isn't of real importance anyway. The chapter devoted to habit modification is valuable, as are other less significant practical ideas, but the book fails physiologically to meet the requirements of a basic manual in the field of disorders of speech.

Introduction à l'étude de la chiroscopie médicale. Par Henri Mangin-Balthazard. Préface du Docteur Fortier-Bernoville. Paper. Price, 25 francs. Pp. 269, with 45 illustrations. Paris: La Renaissance Moderne, 1932.

This book attempts to classify the various shaped hands and to work out a system of diagnosis for all diseases from the shapes of the fingers and hands and the lines of the palm. The line of reasoning, if it can be so dignified, is as follows: The author analyzes a hand as one in which there is a strong probability that the possessor will contract syphilis. He then states that the person has locomotor ataxia. This is the whole proof. Palmistry cannot be granted the dignity of medical recognition without presentation in more convincing manner than this. The book has no value from a medical standpoint.

A Synopsis of Surgery. By Ernest W. Hey Groves, M.S., M.D., B.Sc., Consulting Surgeon to the Bristol General Hospital. Tenth edition. Cloth. Price, \$5. Pp. 693, with illustrations. Baltimore: William Wood & Company, 1933.

This is a standard work. The qualifications and war record of the author are excellent. He has devised many ingenious operations. The volume is an epitome of the salient facts in surgical practice. These are presented in such a manner that they can be easily and quickly referred to. The special arrangement of headings, type and indented margins enables the reader to see the scope of the subject at a glance and to refer to any part of it readily. Only the main points of operations are referred to, so that the principles which underlie each procedure are not lost in a mass of details. Anatomic and pathologic facts are inserted only when they are essential to a comprehension of clinical signs and operative measures. A summary of the important surface markings is given in the last chapter. In the main arrangement of the book and in the sequence of the chapters, the author follows Rose and Carless's large book on surgery. This is the best synopsis of surgery on the medical book shelves. It has all the qualities of an excellent review of general surgery: directness, frankness, full exposition and little padding.

Ergebnisse der gesamten Tuberkuloseforschung. Herausgegeben von H. Assmann, H. Beitzke, H. Braeunling und St. Engel. Band V. Paper. Price, 43 marks. Pp. 427, with 128 illustrations. Leipzig: Georg Thieme, 1933.

Following the plan of the first four volumes of Assmann's "Results of Aggregate Tuberculosis Inquiries," this volume includes six important monographs. In the first monograph, covering the subjects of the development, organization and problems of combating rural tuberculosis, Dr. Friedrich Koester of Westphalia, in fifty-two pages of valuable information, includes practically all the phases of the organization and management of rural tuberculosis control and its limitation in Germany. Costs, tuberculin testing, nursing problems, sputum examinations and roentgen diagnosis are all considered, as well as sanitary and hygienic measures. The importance of transportable x-ray facilities is emphasized. The value of lay cooperation is stressed. The working province is based on political divisions, and cooperative efforts have been found particularly valuable in handling this difficult problem. Those interested in tuberculosis control will find this portion of the book interesting and valuable.

The second monograph (65 pages), on the hilus of the child, by Dr. Stefan Engel of Dortmund, is well illustrated with reproductions of photographs, drawings and roentgenograms aimed to elucidate the hilar region normally and in disease. The chapters on nonspecific hilitis and the condition in chronic residual bronchial catarrhs are valuable for students of the chest. In addition, the summation of hilar shadows is elucidated in a valuable way, followed by a clear definition of the hilus in primary tuberculosis. Especially worth while in all these monographs are the author's summarized conclusions. Engel points out that our views on specific and nonspecific hilitis shadows based on anatomic considerations have suffered decided revision and except in the few massively involved cases of tuberculous bronchial glands definite conclusions are not warranted.

The third monograph (73 pages), on "Views of Serology of Tuberculosis" by Drs. Ernst Witebsky and Rudolf Klingenstein of Heidelberg, considers a most difficult subject because of the many phases involved which have proved controversial regarding, especially, practical diagnosis and prognosis. In the light of our present knowledge of specific and nonspecific blood changes in tuberculosis and recent chemical studies the presentation is well adapted for the student's as well as the specialist's use. An extensive bibliography under various divisions of the subject at the end is a valuable adjunct. Students might not all agree with the conclusions drawn, but personal observations and the literature cited warrant the stand taken at present. Dogmatism is avoided and the burden of final proof left for the future to reconcile clinical and serologic-clinical analyses. All in all, it is a masterly presentation of the subject.

The fourth monograph (29 pages), on the "Infectiousness of Childhood Tuberculosis: Bacterial Excretion in Favorable and Imperceptible Intrathoracic Processes," by Dr. Hans Opitz of Mainz, considers bacillary excretion in "manifest open" and "closed" cases and further gives a valuable age classification. His stand on the infectiousness of the cases is one to which all bacteriologists will contribute and which is in line with modern reasoning that so long as we cannot trace the source of infections in more than half of the cases it is well to be suspicious of all, even slight cases, especially since young children require only short exposure for infection.

In the fifth monograph (117 pages), on the "Pathologic Anatomy of the Hematogenous Disseminated Tuberculosis," by Dr. Walter Pagel of Heidelberg, are considered bacteremias, the acute and so-called atypical forms of tuberculosis generalization, chronic hematogenous spread, and hematogenous isolated phthisis. Whether one agrees with the Ranke conceptions or not, one must recognize an excellent contribution by Pagel in the field of his greatest interest as judged from his voluminous contributions on this subject. The least one can say of this monograph is that the student of medicine will obtain a good conception of Ranke's and Pagel's views from the excellent presentation of the subject by an authority qualified to present this phase of tuberculosis and in an enlightening fashion.

The final sixth monograph (61 pages), on "The Fate of Tuberculous Infected School Children," by Dr. Karl Mattsson of Malmö, Sweden, concludes the well worth while fifth volume of the Assmann set on tuberculosis. After reviewing the

various eras of incidence observations, the author presents his personal studies and plans of procedure. Many of his conclusions, such as the rarity of fetal infection and the high mortality of the first year, diminishing with age, are universally accepted. He calls attention to the increased hazard with increased stress periods.

In general this volume can hardly be considered suited to the wants of the youth in medicine, but it is suited to the needs of the profound student regardless of his specialistic leanings who is interested particularly in the subjects presented in these six monographs or who wishes to complete his set by addition to the previous four volumes. It is the finished art of experts in various fields of tuberculosis.

Modern Aspects of Gastro-Enterology. By M. A. Arafat, M.R.C.P., Medical Assistant to Guy's Hospital, London. With foreword by Arthur F. Hurst, M.D., F.R.C.P., Senior Physician, Guy's Hospital, London. Cloth. Price, \$8.25. Pp. 374, with 79 illustrations. Baltimore: William Wood & Company, 1933.

The author spent three years in the gastro-intestinal clinics of Europe; the book represents the information he gathered on abdominal disorders. He has presented his observations in an orderly and complete manner. As he states, the book is intended to be a companion to the more complete works on gastro-enterology. The illustrations are excellent, especially those in color showing the view obtained through a sigmoidoscope. The laboratory and x-ray phases are concise and well presented. This book should serve well as a textbook for the student and general practitioner.

Die Bluttransfusion in Theorie und Praxis. Von Dr. med. Hans Wildemann, a. o. Professor für Chirurgie an der Universität Berlin. Paper. Price, 9.60 marks. Pp. 137, with 36 illustrations. Berlin: Julius Springer, 1933.

There has been a recent reaction among some members of the medical profession regarding blood transfusions. The practice of giving blood transfusions without specific indication or without due consideration of the possible contraindications has led to many unpleasant sequelae. The author of this monograph has made available for the profession an unusually complete source of information on this subject. The treatise considers the history of blood transfusions, the selection of the donor, the technic and the practical application of blood grouping and typing. In his discussion he not only outlines a standard procedure for the selection of the donor but also emphasizes the practical points that cannot be formulated into absolute rules. He next discusses the fate and physiologic effect of transfused blood and points out the specific action of plasma and corpuscles. The chapter on the technic of transfusion is unusually complete. Many methods for giving whole and citrated blood are discussed and the advantage of each is carefully evaluated. The final chapter is devoted to a consideration of indications and contraindications of transfusion and a summary of the entire subject. The monograph is a timely contribution to clinical medicine and covers in a scholarly manner a subject of great practical value. It is highly recommended to those who have occasion to recommend or give blood transfusion in the practice of medicine.

Surgical Pathology. By William Boyd, M.D., M.R.C.P., F.R.C.P., Professor of Pathology, University of Manitoba. Third edition. Cloth. Price, \$10. Pp. 866, with 490 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

The book gives a fairly comprehensive review of the facts and theories concerned with the etiology and pathologic basis of most of the conditions that confront a surgeon in his practice. The treatment of the subject considered is in the main orthodox and authoritative. Some of the views presented are rather radical, especially the discussion on goiter. "The more one studies the problem of goiter, the more is one convinced of the mistake of separating toxic adenoma from exophthalmic goiter. Both should be included under the heading of Graves' disease" (p. 200). Finally, the conclusion is reached that "the prevalent practice of removing a large portion of the struggling gland is hardly likely in the end to prove the best method of treatment." The surgeon will find considerable difficulty in evaluating the author's suggestions for treatment. Further, no mention is made in the paragraph on changes in other organs (p. 215) of the well known effect of exophthalmic goiter on the liver. Several minor matters might be more carefully

stated. A fistula is defined as a "passage connecting a skin with a mucous surface" (p. 44). Lymph nodes are continually mentioned as "glands." In discussing carcinoma, the old fashioned term "colloid degeneration" is used in referring to collections of mucus. Evidently the mucous nature of these collections is not recognized. Without any particular evidence the author states (p. 149) that the stroma in epidermoid carcinomas "is due to the irritation produced by the epithelial masses." The word "protoplasm" is used in place of cell cytoplasm. No support is offered for the statement (p. 238) that "on the magenstrasse no mucin is produced." In the discussion of ulcers of the stomach and duodenum the author groups these under the one heading of peptic ulcer and gives the impression that they are clinically and pathologically the same lesion, irrespective of their situation. On page 236 it is stated that "if the field of investigation is widened and all chronic ulcers are taken into consideration, it will be found that peptic ulcer is commoner in the stomach than in the duodenum." This is probably not correct. On page 366 it is stated that "the peritoneum consists of a layer of flattened epithelial cells." Certainly further questions can be raised as to the exact nature of these cells. With reference to metastatic carcinoma, the author states (p. 446) that "the prostate resembles the breast, the thyroid, and the adrenal." He probably means the kidney. The statement (p. 664), that "an extract of this part [anterior lobe] of the pituitary is absolutely without any physiological effect" seems to be rather too sweeping. In considering tumors of the hypophyseal duct under the heading of Rathke pouch tumors, the author does not mention the occurrence of adenomatoma, so common in this region. There is still some awkwardness in the wording of the discussion concerning blood grouping (p. 834). The lack of emphasis in the previous editions on the importance of fat embolism has been corrected in the present volume. Also, the author has omitted the rather invidious comparison between "living" and "deadhouse" pathology. The author's illuminating style of expression and his avoidance of stereotyped descriptions make an interesting and easily readable volume. The illustrations are uniformly well chosen and excellently reproduced.

Über das Verhalten von Stechmücken besonders von *Anopheles maculipennis* bei verschiedenen Temperaturen und Luftfeuchtigkeiten. Von E. Martini und E. Teubner. Beiheft 1 zum Archiv für Schiffs- und Tropenhygiene, Pathologie und Therapie exotischer Krankheiten, Band XXXVII. Gegründet von C. Menze. Paper. Price, 6 marks. Pp. 80, with 10 illustrations. Leipzig: Johann Ambrosius Barth, 1933.

Experiments with *Culex pipiens*, *Theobaldia annulata*, *Aedes aegypti* and *Anopheles maculipennis* were conducted to determine the effects of combinations of various temperatures and humidities on their length of life, their biting habits, their hibernation activities and the finding of places of shelter. The morphologic and bionomic differences between the varieties messeae and atroparvus of *Anopheles maculipennis* are recapitulated and discussed in connection with their malaria-carrying ability. It is shown that the distributions of these two varieties between houses and stables may be exactly opposite in different climates or may differ markedly in different regions, owing to differences in the prevalence of construction of dwellings and stables. The influences, favorable and unfavorable, of temperatures and humidities on the longevity or mortality of various species and races of mosquitoes are shown to be the chief determining factors in their different distributions. The authors attack the problem of anophelism without malaria in a new manner.

Surgical Operations: A Textbook for Students and Nurses. By E. W. Hey Groves, M.D., B.Sc., M.S., Consulting Surgeon, Bristol General Hospital. Third edition. Cloth. Price, \$4.50. Pp. 263, with illustrations. New York & London: Oxford University Press, 1933.

This book has been written for nurses during their training and for later reference. It includes the indications and descriptions of all common operations. General technic is taken up, and the various operating room essentials are discussed. An elaborate section includes pictures of most instruments needed in the operating room. Various regions of the body are described in a systematic manner and the classic operations are clearly and briefly described. The conciseness of the text, together with the careful selection of the essential details, is possible only through the wide experience of the writer, who should be congratulated on the result of his efforts.

Medicolegal

Workmen's Compensation Acts: Compensability of Typhoid Fever.—The claimant's husband, employed by a drug company, died from typhoid fever contracted during an outbreak in Ogden, Utah. She sought compensation under the workmen's compensation act, claiming that he contracted the disease in the course of his employment. Two physicians who investigated the outbreak testified before the industrial commission, on behalf of the claimant, that in their opinion a certain typhoid carrier, and not the city water supply, caused it. Since that carrier often went into the drug store in which the decedent was employed, these witnesses believed that the decedent contracted typhoid fever from him. The employer introduced in evidence a report of the state board of health, purporting to show that the outbreak was due, not to a typhoid carrier, but to a contaminated city water supply. The industrial commission held that the decedent contracted typhoid fever from drinking water, and because he drank the same water at home and at his place of employment, it denied compensation. The claimant appealed to the Supreme Court of Utah. Findings made by the industrial commission on conflicting evidence, said the Supreme Court, are binding on the court. Consequently, under the evidence presented, the court could not disturb the commission's findings. Even if it were shown that the decedent had contracted typhoid fever in the course of his employment, the court doubted whether the claimant would be entitled to compensation. The Utah workmen's compensation act provides compensation only for "personal injury by accident," arising out of and in the course of employment. It provides that the words "personal injury by accident" shall not include a disease, except as it results from an injury. This language, said the court, would seem to indicate a legislative intent that a disease, to be compensable, must be brought about by some injury other than the mere conveying of disease germs to the employee. The finding of the commission denying compensation to the claimant was affirmed.—*Chase v. Industrial Commission (Utah)*, 17 P. (2d) 205.

Workmen's Compensation Acts: Industrial Commission Not Authorized to Award Medical Fees in Excess of Statutory Limits.—The Georgia workmen's compensation act (Michie's Code, 1926, Sec. 3154 (27)) provides that an employer's liability for medical, surgical and hospital services for a workman injured in an industrial accident shall not exceed \$100. The industrial commission of Georgia in making an award included \$100 to be applied toward medical expenses. This amount the injured workman paid to the hospital. Later a physician, who apparently attended the injured workman at the instance of his employer, sent the employer a bill for \$100, which he refused to pay. The industrial commission then awarded \$100, payable to the physician. The employer's insurer appealed to the court of appeals of Georgia, division No. 2. The industrial commission, said the court, has no authority to require an employer to pay a physician for his services in attending an injured employee in excess of \$100, in the absence of an agreement to become liable for a greater amount. It may be, however, said the court, that the physician has a remedy at law against an employer who requests him to attend an injured employee and then refuses to pay him. The judgment of the court below affirming the award of the industrial commission was reversed.—*Lloyds Casualty Co. v. Eubanks (Ga.)*, 167 S. E. 552.

Malpractice: Plaintiff May Show that Defendant Is Insured.—The defendant osteopath treated Bellheimer for hemorrhoids, by the "infiltration method." After nineteen days' treatment, Bellheimer began bleeding from the rectum. He bled for four days. Then he was so weakened that he fainted. The defendant was told of his patient's condition, but he did not respond, and a physician was summoned. Bellheimer died from the loss of blood. The plaintiff, as administratrix of his estate, sued the osteopath, charging him with negligence in that he failed to use osteopathic methods and failed to respond to the call when his patient was bleeding. Judgment was given in favor of the plaintiff, and the defendant appealed to the Supreme Court of Nebraska.

The defendant-osteopath complained that when a jury was being selected the plaintiff examined prospective jurors as to their connection, if any, with the insurance company by which the defendant was indemnified against loss through malpractice claims. He complained, too, that he was cross-examined by the plaintiff as to his indemnity insurance. The Supreme Court concluded that this disclosure of the defendant's insurance was not improper, citing *Nichols v. Owens Motor Company*, 121 Neb. 105, 236 N. W. 169. Moreover, the fact that the defendant disclosed the identity of his insurer in the trial judge's chambers, prior to the impaneling of the jury, did not so negative the possibility of prospective jurors being disqualified as to foreclose further inquiry into the matter, nor did it deprive the plaintiff of her right to cross-examine witnesses as to their credibility.

Evidence was given in the course of the trial, including the testimony of the defendant himself, that the treatment of hemorrhoids under the principles of osteopathy was identical with their treatment under the principles of nonsectarian medicine. The trial court therefore properly received the testimony of nonsectarian practitioners with respect to the matter. The judgment in favor of the plaintiff was affirmed.—*Bellheimer v. Rerucha (Neb.)*, 246 N. W. 867.

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine, Chicago, Sept. 13-14. Dr. Arthur H. Ring, 163 Hillside Avenue, Arlington, Mass., Secretary.
- American Academy of Ophthalmology and Otolaryngology, Boston, September 18-22. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Executive Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Lucerne-in-Quebec, Canada, September 11-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.
- American College of Surgeons, Chicago, October 9-13. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
- American Congress of Physical Therapy, Chicago, September 11-15. Dr. F. B. Balmer, 35 East Wacker Drive, Chicago, Secretary.
- American Public Health Association, Indianapolis, October 9-12. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.
- American Roentgen Ray Society, Chicago, September 25-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.
- Associated Anesthetists of the United States and Canada, Chicago, October 8-12. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
- Association of American Medical Colleges, Minneapolis, Oct. 30-Nov. 1. Dr. Fred C. Zappfe, 5 South Wabash Avenue, Chicago, Secretary.
- Association of Military Surgeons of the United States, Chicago, September 25-27. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.
- Colorado State Medical Society, Colorado Springs, September 14-16. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.
- Delaware Medical Society of, Wilmington, September 26-27. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.
- Idaho State Medical Association, Twin Falls, September 18-19. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.
- Indiana State Medical Association, French Lick, September 25-27. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 16-20. Dr. W. B. Peck, 12½ East Stephenson Street, Freeport, Ill., Managing Director.
- Kansas City Southwest Clinical Society, Kansas City, Mo., October 3-5. Dr. Lewis G. Allen, 601 Minnesota Avenue, Kansas City, Kan., Secretary.
- Kentucky State Medical Association, Murray, September 11-14. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, September 12-14. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.
- Mississippi Valley Conference on Tuberculosis, Kansas City, Mo., October 6. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.
- Nevada State Medical Association, Las Vegas, September 29-30. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.
- New England Surgical Society, Boston, September 29-30. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.
- Northern Minnesota Medical Association, Willmar, September 8-10. Dr. O. O. Larsen, Detroit Lakes, Secretary.
- Oregon State Medical Society, Portland, Oct. 26-28. Dr. Albert W. Holman, 364 Washington Street, Portland, Secretary.
- Pennsylvania, Medical Society of the State of, Philadelphia, October 2-5. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.
- Southern Minnesota Medical Association, New Ulm, September 25. Dr. M. C. Piper, Mayo Clinic, Rochester, Secretary.
- Utah State Medical Association, Salt Lake City, September 14-16. Dr. L. R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.
- Vermont State Medical Society, Barre, October 5-6. Dr. W. G. Ricker, 31 Main Street, St. Johnsbury, Secretary.
- Virginia, Medical Society of, Lynchburg, Oct. 24-26. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

17:873-1136 (April) 1933

- Absorption of Protective Agent from Rats Resistant to Transplantable Sarcoma. W. H. Woglom, New York.—p. 873.
Genetic Factors in Relation to Etiology of Malignant Tumors. M. R. Curtis, W. F. Dunning and F. D. Bullock, New York.—p. 894.
Potassium Content of Benign Uterine Tumors. L. C. Scott, New Orleans.—p. 924.
Some Observations of Effects of Radium Irradiation on Tissue Cultures. W. G. Whitman, Baltimore.—p. 932.
Familial Multilocular Cystic Disease of Jaws. W. A. Jones, Kingston, Ont., Canada.—p. 946.
Treatment of Carcinoma of Cervix in Detroit, Michigan. H. C. Saltzstein and A. A. Topick, Detroit.—p. 951.

18:1-268 (May) 1933

- *Excision of Rectum for Cancer. J. P. Lockhart-Mummery, London, England.—p. 1.
Radiosensitivity of Tumors Derived from Cartilage. A. U. Desjardins, Rochester, Minn.—p. 15.
Feeding Solution for Cultures of Human Fibroblasts. J. P. M. Vogelaar and Eleanor Erlichman, New York.—p. 28.
Carcinoma of Rectum Associated with Fistulas in Ano: Case. J. Lynch and P. Gross, Cleveland.—p. 39.
Exhibit of Important Books, Papers and Memorabilia Illustrating Evolution of Knowledge of Cancer: For the Graduate Fortnight on Tumors at the New York Academy of Medicine, Oct. 17 to 28, 1932. C. D. Haagensen, New York.—p. 42.

Excision of Rectum for Cancer.—Lockhart-Mummery describes an operation for cancer in which the growth is at the anus or in the rectum proper and not fixed to important structures. He uses a low spinal anesthesia. Chloroform and ether are contraindicated. Although the operation can be performed in one stage, it is advisable to do the colostomy a week or two before the actual excision. If the patient is a man, a self-retaining catheter is passed into the bladder, the patient is turned over on the side, and the anus is stitched up with a curved needle and stout silk thread. The incision is made from a little above and behind the base of the coccyx forward toward the perineum and surrounding the anus to about 2 inches in front of the anus. The incision is deepened posteriorly, the base of the coccyx exposed and the coccyx disarticulated with the knife, or the bone divided with a chisel; the deep fascia is divided transversely, the middle sacral artery or its branches are cut and the bleeding is controlled. The first finger of the left hand is passed beneath the fascia and pushed forward under the left levator ani muscle and between it and the rectum. The structures between the finger and the skin are divided and the bleeding points checked. This procedure is repeated on the opposite side. The wound in front of the rectum is deepened to just behind the bulb of the urethra, or behind the vagina, until the catheter in the urethra can be felt. The separation is continued and one keeps quite close to the posterior wall of the urethra until the capsule of the prostate is reached, when the rectum can be stripped off with the finger quite easily until the two seminal vesicles are exposed; in women the rectum is stripped off the posterior vaginal wall. It is important to keep posterior to the vesicles, or the bladder will be damaged. The fascial attachments holding the rectum on each side and posteriorly are divided, the rectum is pulled backward away from the bladder, and the peritoneal cavity is opened just in front of the rectum. A large gauze pack with a tape is pushed into the peritoneal cavity to prevent the entrance of blood. The peritoneum is divided toward the back, along each side of the rectum and close to it. The rectum is drawn forward and the mesorectum divided as high up and as far back as possible. Large swabs soaked in antiseptic solution are placed above and below the intestine at a point above the point of division. The peritoneal and muscular coats of the colon are

divided, only the mucous membrane being left undivided. The muscular coat is carefully stripped back for one-fourth inch, the intestine is divided between two clamps with a cautery, and the stump is ligatured with stout catgut. A purse string suture is used to close the inverted end of the colon. The cloth and pack are removed from the peritoneal cavity and the peritoneal floor is closed by two catgut sutures starting at the opposite ends of the gap and tied together in the middle line. In inserting this suture, care must be taken to leave the turned-in end of the colon in the wound and not in the peritoneal cavity. Separate mattress stitches of fish gut, loosely tied, are best for the skin sutures, and a cigaret drain of rubber tissue is inserted in the middle of the wound. The mortality of this operation among the author's 330 patients was only 7 per cent, and this includes patients up to the age of 78. In 167 cases from his private practice there were only 6 deaths, a mortality of less than 4 per cent.

American Journal of Ophthalmology, St. Louis

16:385-480 (May) 1933

- Accidents and Complications Occurring in Intracapsular Extraction of Senile Cataracts. I. Barraquer, Barcelona, Spain.—p. 385.
Epidemic Superficial Keratitis. S. Sanyal, Calcutta, India.—p. 390.
Size of Pupil as Possible Index of Ocular Fatigue. M. Luckiesh and F. K. Moss, Cleveland.—p. 393.
Additional Experiments Verifying Presence of Treponema Pallidum in Cornea in Experimental Interstitial Keratitis. C. A. Clapp, Baltimore.—p. 397.
International Visual Standards for Aviators. C. Berens, New York.—p. 403.
*Ocular Complications in Case of Agranulocytic Angina, Bilateral Ring Abscess with Total Visual Loss. H. Barkan, San Francisco.—p. 406.
Inoculation of Human Conjunctiva with Trachomatous Materials. P. Thygeson, Iowa City.—p. 409.
Vision for Equilibrium and Orientation. E. Jackson, Denver.—p. 412.
Scotometry of Retinal Edema. J. N. Evans, Brooklyn.—p. 417.
Eyes of Some Famous Historical Characters: Little Journeys in Ophthalmology—I. C. A. Bahn, New Orleans.—p. 425.

Agranulocytic Angina.—Barkan reports a case of agranulocytic angina with ocular complications in a woman, aged 73. She had had swollen and sore eyes one and two years previous to her admission. Three weeks before admission, the patient developed an acute nasal discharge, sore throat, cough and fever. A week later the left eye became sore, red and swollen, followed by the right eye, so that on admission she could not open either eye. Following treatment with penicillin intravenously, the patient was better. The ophthalmic changes increased in severity, leading finally to complete blindness. The patient recovered from her agranulocytic angina.

American Journal of Physiology, Baltimore

104:259-518 (May 1) 1933. Partial Index.

- Studies on Pain Sensibility of Arteries: I. Some Observations on Pain Sensibility of Arteries. R. M. Moore and Ruth E. Moore, Galveston, Texas.—p. 259.
Id.: II. Peripheral Paths of Afferent Neurons from Arteries of Extremities and of Abdominal Viscera. R. M. Moore and A. O. Singleton, Jr., Galveston, Texas.—p. 267.
Effects of Adrenal Medulla and Thyroid on Respiratory Metabolism of Pancreatic Diabetes. G. C. Ring and C. W. Hampel, Boston.—p. 298.
Studies on Physiology of Sleep: VII. Effect of Position of Body and of Sleep on Rectal Temperature in Man. N. Kleitman and A. Duktorsky, Chicago.—p. 340.
Effect of Intravenous Administration of Lecithin and Sodium Chloride on Blood Sugar Values. D. E. Gregg, Cleveland.—p. 344.
Observations on Blood of Normal Human Subjects During Fetal Liver Feeding. O. S. Walters and P. H. Woodard, Lawrence, Kan.—p. 364.
Effects of Adrenalectomy and Cortico-Adrenal Extract on Renal Excretion and Tissue Fluids. H. Silvette and S. W. Britton, Charlottesville, Va.—p. 399.
Comparison of Clearances of Various Urinary Constituents. H. L. White and Betty Monaghan, St. Louis.—p. 412.
Action of Acetylcholine on Intestine. F. Bernheim, Durham, N. C.—p. 433.
Simultaneous Study of Constituents of Sweat, Urine and Blood: Also Gastric Acidity and Other Manifestations Resulting from Sweating: X. Basic Metals. G. A. Talbert, C. Haugen, R. Carpenter and J. E. Bryant, Grand Forks, N. D.—p. 441.
Studies on Physiology of Sleep: VIII. Diurnal Variation in Performance. N. Kleitman, Chicago.—p. 449.
Respiratory Death from Central Vagus Stimulation After Removal of Stellate Ganglions. S. P. Cromer and A. C. Ivy, Chicago.—p. 457.
Existence of Afferent Respiratory Impulses Mediated by Stellate Ganglions. S. P. Cromer, R. H. Young and A. C. Ivy, Chicago.—p. 468.
Osmotic Relations Between Blood and Body Fluids: IV. Pancreatic Juice, Bile and Lymph. A. Gilman and G. R. Cowgill, New Haven, Conn.—p. 476.

American Journal of Surgery, New York

20: 201-514 (May) 1933

- Presidential Address: Surgery and Its Relation to Society. R. S. Cathcart, Charleston, S. C.—p. 204.
- Ureteral Calculi. G. R. Livermore, Memphis, Tenn.—p. 214.
- Ideal Operation for Undescended Testis and Necessity for Operation. E. D. Newell, Chattanooga, Tenn.—p. 223.
- Endocrine Influence in Production of Prostatic Hypertrophy: Method for Its Control. W. E. Lower, Cleveland.—p. 230.
- *Cystectomy for Carcinoma of Bladder: Report of Cases. R. C. Coffey, Portland, Ore.—p. 254.
- Tumors of Parathyroid Gland: Report of Two Cases. F. W. Rankin, Lexington, Ky., and J. T. Priestley, Rochester, Minn.—p. 298.
- Peripheral Nerve Symptoms in Goiter. A. McGlannan, Baltimore.—p. 315.
- Congenital Stenosis of Cardia: Report of Case in Two-Day-Old Infant. J. K. Simpson, Jacksonville, Fla.—p. 319.
- Diverticulosis of Duodenum: Report of Case in Fourth Portion of Duodenum. F. L. Barnes, Houston, Texas.—p. 328.
- Remarks on Intestinal Anastomosis, with Description of Simple Aseptic Technic. W. D. Gatch, Indianapolis.—p. 341.
- *Precolostomy for Inoperable Carcinoma of Rectum and Lower Sigmoid. H. B. Stone, Baltimore.—p. 355.
- *Method of Treating Irreducible Prolapse of Rectum. M. R. Reid, Cincinnati.—p. 359.
- Syphilis of Stomach. W. L. Estes, Jr., Bethlehem, Pa.—p. 366.
- *Adynamic Ileus. A. Ochsner and I. M. Gage, New Orleans.—p. 378.
- End-Results in Treatment of Cancer of Breast by Radical Surgery Combined with Preoperative and Postoperative Irradiation. B. J. Lee, New York.—p. 405.
- Cancer Is Curable. F. H. Martin, Chicago.—p. 444.
- Extreme Cardiac Decompression Following Traumatic Arteriovenous Fistula of Left Subclavian Vessels. J. M. Mason, Birmingham, Ala.—p. 451.
- Acute Intestinal Obstruction: Fifth Instalment. M. A. McIver, Coopers-town, N. Y.—p. 475.

Cystectomy for Carcinoma of Bladder.—Coffey reports eleven cases of cystectomy for cancer of the bladder, three of which resulted in surgical deaths. The essential part of the operation is the transplantation of the ureters into the large intestine. This must be performed by the submucous implantation method. He proposes three principles of technic for its performance. The technics are as follows: In the first technic the ureter is drawn into the interlamellar space immediately outside the intestinal mucosa and its split end is dragged through an opening made in the mucosa at the caudal end of the intestinal incision and anchored inside the intestine, thereby bringing the open ureter into the intestinal lumen at the time of operation. In the second technic a tube or catheter is fastened within the ureter by ligatures which both seal the ureter against intestinal infection and anchor it to the catheter, after which the catheter is passed through an opening made in the mucosa at the caudal end of the intestinal incision and is used to draw the ureter into the interlamellar space immediately outside the intestinal mucosa and through the opening in the mucosa into the intestinal lumen. The urine is transmitted from the upper ureter through the catheter into a receptacle outside the body. The open ureter is exposed to intra-intestinal pressure only after the intra-intestinal end of the ureter sloughs and permits the catheter to come away from eight to sixteen days after operation. In the third technic the ureter is brought into the interlamellar space immediately outside the intestinal mucosa by an anchor suture, which fastens the end of the ureter in the angle of the caudal end of an uncompleted intestinal incision. The anastomosis is gradually made by a tightly tied suture, which transfixes both the ureter and the intestinal mucosa. The anastomosis is complete from two to four days after operation. The author believes that the second technic is ideal for use in conjunction with cystectomy for cancer of the bladder, because the two ureters are transplanted in one operation. In the male, cystectomy is performed at the same time and the ureters are transplanted with little or no additional risk. Its only objection is that it requires special skill in the performance of intra-peritoneal surgery.

Precolostomy for Inoperable Rectal Carcinoma.—The procedure to which Stone gives the title of "precolostomy" consists in doing what amounts to an ordinary colostomy with the exception of the final step of actually opening the intestine. He proceeds as follows: With the abdomen still opened by the original exploratory incision, a small left-side McBurney incision is made, from 1½ to 2 inches long. The most convenient point of the intestine is gently drawn up into the McBurney incision until about one fourth of its circumference extends beyond the skin level, and it is fixed by a few stitches to the skin, no other sutures being used. Care must be taken

that the incision in the peritoneum is not small enough to pinch the cone of intestine that is drawn through it. The principal exploratory incision is then closed and the wounds are dressed together under one dry dressing. The author believes that the advantages of this procedure are that it avoids the necessity of a second operation for obstruction, should such a condition develop, and that it also avoids the disagreeable features of a colostomy until such time as a colostomy becomes imperative.

Method of Treating Irreducible Prolapse of Rectum.—Reid describes an operative procedure for prolapse of the rectum irreducible by ordinary nonoperative methods, in which rubber tubing, about 1 inch in diameter, is inserted into the prolapsed rectum and passed through the sphincters well up into the rectum. With the tube thus placed, the prolapse surrounding it is palpated to make sure that there is no herniation of intestine into a peritoneal pouch. The tube is anchored at the point at which palpation is most satisfactory and convincing by means of a few heavy silk sutures at the apex of the prolapse. Next a constricting rubber band is placed around the prolapse at the normal surface level of the anus and just distal to the external sphincter muscle. This band stops the circulation to the prolapse and also occludes any peritoneal pouch that might be present. The patient is watched for evidences of intestinal obstruction. In the author's patients at the end of two weeks, during which time there was normal defecation and expulsion of gas through the tube, the entire prolapse sloughed away. A spontaneous anastomosis had occurred at the level of the rubber band. Tone quickly returned to the muscles, and at the time of the patients' discharge from the hospital there was good sphincter control and no evidences of rectal stricture. He believes that this procedure lessens the chances of peritonitis which attend surgical amputation of the prolapse and suture in the presence of infection and necrosis.

Adynamic Ileus.—Ochsner and Gage state that the most frequent cause of adynamic ileus is exposure to air and manipulation during laparotomy. Adynamic ileus occurs earlier post-operatively than mechanical ileus. It is characterized by the absence of colicky, intermittent pain. Plain roentgenograms of the abdomen are of inestimable value in the diagnosis of all forms of ileus. The treatment of adynamic ileus varies according to the type. The prophylactic treatment consists of abandonment of preoperative and postoperative catharsis and the avoidance of unnecessary trauma and peritoneal contamination during the performance of a laparotomy. Physiologic ileus, which occurs for varying periods of time following all laparotomies, is treated by withholding the oral administration of all substances until nausea has ceased, by the application of heat to the abdomen, and by the administration of morphine. Water balance should be reestablished. Severe adynamic ileus is treated by transduodenal decompression by means of indwelling nasal catheters and remineralization of the patient. Hypertonic salt solutions injected intravenously stimulate the intestinal movement in adynamic ileus. In severe cases, one or more enterostomies are frequently necessary in order to decompress the dilated intestine. A splanchnic block (splanchnic or spinal analgesia) is often efficacious. Drugs are of little or no value.

American Journal of Tropical Medicine, Baltimore

13: 243-340 (May) 1933

- Yellow Fever Virus Encephalitis in South American Monkeys. W. Lloyd and H. A. Penna, Bahia, Brazil, South America.—p. 243.
- Transmission of Quartan Malaria by Anopheles Quadrimaculatus: Note. M. F. Boyd and W. K. Stratman-Thomas, Tallahassee, Fla.—p. 265.
- Animal Susceptibility to Trypanosoma Hippicum, Equine Trypanosome of Panama, with Especial Reference to Cattle as Unharmful Host and Probable Reservoir of Importance. H. C. Clark and L. H. Dunn, Panama, Republic of Panama.—p. 273.
- Air Traffic in Relation to Public Health. T. H. D. Griffiths, Jacksonville, Fla.—p. 283.
- *Preservation of Yellow Fever Immune Serums. W. Lloyd and H. A. Penna, Bahia, Brazil, South America.—p. 291.
- Occurrence of Microfilaria Ozzardi in Panama. O. R. McCoy, Rochester, N. Y.—p. 297.
- Survey of Four Hundred and One College Freshmen for Intestinal Protozoa. J. H. Arnett, D. H. Wenrich and R. M. Stabler, Philadelphia.—p. 311.
- Amebiasis a Public Health Problem in Cities of the Southern United States. M. S. Dougherty, Jr., Atlanta, Ga.—p. 317.
- *Cure of Nutritional Anemia by One of the Legumes: Preliminary Report. D. H. Cook and T. Rivera, San Juan, Puerto Rico.—p. 327.

Preservation of Yellow Fever Immune Serums.—Lloyd and Penna state that serum may be conveniently dried in test

tubes or in ampules in from 1 to 10 cc. units. The use of an oversized container for the specimen of serum to be dried permits it to freeze and dry as a thin film on the side of the tube, and it makes easy the hermetic sealing of the tube without heating the contents. The serum is placed in suitable tubes and the butt of each tube is immersed in a dish of chilled 95 per cent alcohol. The tubes are whirled manually in the alcohol until the greater part of the serum thrown by centrifugal force on the walls of the tube has frozen in the lower third of the tube in a thin film having the form of an inverted thimble. The tubes of serum are then put into the desiccator and dried by sulphuric acid under high vacuum. The air is exhausted from the desiccator by a high vacuum pump capable of reaching a vacuum of 0.5 mm. of mercury in three and a half minutes. The attained frozen state of the serum is maintained during the drying process by using a desiccator that has been packed in a salt-ice mixture for two hours previous to its use. This allows time for the slow chilling of a layer of glycerin 35 mm. deep, placed in the bottom of the desiccator for contact with the butts of the tubes. The tubes are removed after twenty-four hours and sealed in the flame of a blow torch. At this time the thimbles of pale yellow serum lie loose in the butts. A little shaking converts them into a fine dry powder. The tubes are ordinarily stored at refrigerator temperature. When needed for use, the desiccated serum may be rehydrated by opening the ampule and adding a volume of distilled water equal to that lost in desiccation. The fine powder readily dissolves. The results of titrations (by the method of Sawyer and Lloyd) indicate that preservation of yellow fever immune serum by rapid desiccation in vacuo and in the frozen state causes no titrable reduction in the content of "immune protecting antibody" after storage at refrigerator temperatures for a period of five months.

Nutritional Anemia.—Cook and Rivera draw the following conclusions as a result of feeding pigeon peas *Caján cajan* (L.) Millsp. (from 5 to 10 Gm. daily) to rats on an anemia-producing diet: 1. Gandules or pigeon peas exhibit curative properties in this type of anemia. 2. Fresh peas show greater regeneration than the ash of equivalent quantities, when both are fed at levels suboptimal for normal hemoglobin regeneration. 3. It is suggested that experiments designed to produce less than maximum regeneration may show differences in the efficiency of various foods and perhaps throw light on the question of the part played by inorganic versus organic constituents in hemoglobin formation.

American Review of Tuberculosis, New York

27: 411-528 (May) 1933

- Pathologic Anatomy of Pulmonary Tuberculosis in the American Negro and in the White Race. F. R. Everett, Philadelphia.—p. 411.
- *Comparative Sensitiveness of the Pirquet and Intracutaneous Tuberculin Tests. J. D. Aronson, Philadelphia; D. Zacks, Brookline, Mass., and J. J. Poutas, Boston.—p. 465.
- Tuberculosis and Tuberculous Infection Among Nurses: Study of Nursing Personnel of the University of California Hospital. S. J. Shipman and Elizabeth A. Davis, San Francisco.—p. 474.
- Correlation of Blood Counts in One Hundred and Fifty Clinical Cases of Tuberculosis and Underlying Pathologic Changes as Shown by Serial X-Ray Films. J. W. Flinn, Prescott, Ariz.; R. S. Flinn, Phoenix, Ariz., and Z. M. Flinn, Albuquerque, N. M.—p. 488.
- *Use of Filtered Air Chambers in Pulmonary Tuberculosis. A. L. Barach, New York.—p. 508.
- Sanatorium Treatment of Lupus. L. Alpert, Middleboro, Mass.—p. 515.
- Some Aspects of Artificial Pneumothorax Technic: Description of Two Improved Apparatuses. J. W. Cutler, Philadelphia.—p. 522.

Comparison of Tuberculin Tests.—Aronson and his associates made a study of the relative sensitiveness of the Pirquet and the intracutaneous tuberculin tests in determining the incidence of tuberculous infection. For this purpose two large groups of white school children near Boston were tested simultaneously by the two methods. Of the children between the ages of 5 to 19 years who failed to react to the Pirquet test, from 1.5 to 3.9 per cent, with an average of 2.9 per cent, reacted to 0.01 mg. of tuberculin. When 1 mg. of tuberculin was employed, the total of those who failed to react to the Pirquet test but reacted to the intracutaneous test ranged from 14.2 to 28.4 per cent, with an average of 19.1 per cent. The total of those who reacted to the intracutaneous test and not to the Pirquet test yielded a negligible increase in the amount of infection detected by this means. Those who failed to react to the Pirquet test, from 17.8 to 30 per cent, with an average

of 22 per cent, reacted to the intracutaneous test with tuberculin. Repetition of the Pirquet test yielded a negligible increase in the amount of infection detected by this means. These observations were compared with two previous surveys of white school children, one made in Massachusetts with the Pirquet test, and the other made in Philadelphia with the intracutaneous test, which showed a higher incidence of infection in Philadelphia. Children in schools near Boston were found to have tuberculous infection less frequently than public school children in other parts of Massachusetts. In an institution near Boston the incidence of infection was higher than that of public school children. It was found that a mathematical factor, a "correction figure," could not be devised to convert results obtained by the one method into those obtained by the other.

Filtered Air Chambers in Tuberculosis.—Barach treated three patients presenting active bilateral pulmonary tuberculosis for eleven weeks in filtered air chambers. He observed no specific effects due to the inhalation of filtered air. A leak-tight room was equipped with a ventilation apparatus capable of passing the entire cubic contents of the room through a fine wool filter each minute. After the air was filtered of 99 per cent of the dust and bacteria contained in it, it was passed over cold pipes for cooling and condensation of the moisture contained in it, and then heated so that optimal conditions of temperature and humidity prevailed in the room. Two of the patients showed no improvement except for a slight gain in weight. The other patient showed more gain in weight and a decreased temperature and pulse range, but not any greater than one would expect from eleven weeks' rest in bed. Stereoroentgenograms of the chest of the first two patients showed a slight increase in the process. In the other one, the infiltration was noted as essentially unchanged with a slight possible decrease on the left side. The patients were kept at rest in bed and received a high caloric diet and symptomatic medication when it was required for cough or bowel movements.

Annals of Medical History, New York

5: 205-314 (May) 1933

- Willard Parker. J. Ruhrah, Baltimore.—p. 205.
- Reflection of Arabian Medicine at Salerno and Montpellier. L. M. Sa'di, Detroit.—p. 215.
- Arabian Medicine as Represented in Memoirs of Usamah Ibn-Munqidh. Dana C. Munro, Princeton, N. J., and C. D. Haagensen, New York.—p. 226.
- George E. Goodfellow, Frontier Surgeon and Soldier (1855-1910). M. B. Wesson, San Francisco.—p. 236.
- Short History of Sweating Sickness. M. B. Shaw, Baltimore.—p. 246.
- Earliest Suggestion of Use of Cocaine for Local Anesthesia (Moreno y Maiz, 1868). W. F. von Oettingen, Cleveland.—p. 275.
- Introduction to History of Women in Medicine: I. Medical Women Before Christianity. Kate Campbell Hurd-Mead, Haddam, Conn.—p. 281.

Annals of Surgery, Philadelphia

97: 641-800 (May) 1933

- Evaluation of Tannic Acid Treatment of Burns. J. B. Mason, Philadelphia.—p. 641.
- *Treatment of Old Unhealed Burns. J. S. Davis and E. A. Kitlowski, Baltimore.—p. 648.
- *Study in Extensive Cutaneous Burns. M. A. McIver, Cooperstown, N. Y.—p. 670.
- Arm-Chest Adhesions and Their Plastic Reconstruction by the Tube Flap Method. J. Kulowski, Iowa City.—p. 683.
- Artificial Inguinal Hernia. E. H. Windsberg, Providence, R. I.—p. 693.
- Hernia into Prevesical Space. I. J. Walker, Boston.—p. 706.
- Intersigmoid Hernia. D. M. Vickers and S. T. Fortune, Cambridge, N. Y.—p. 713.
- Strangulated Femoral Hernia: Anatomy and Surgical Treatment. V. S. Counsellor and F. W. Cox, Rochester, Minn.—p. 717.
- Strangulated Femoral Cystocele. A. P. Vastola, Waterbury, Conn.—p. 724.
- Osteomyelitis of Skull. I. Cohen, New York.—p. 733.
- Use of Continuous Intravenous Infusions in Acute Abdominal Crises. L. S. Raydin and C. G. Johnston, Philadelphia.—p. 749.
- *Tropacocaine Hydrochloride in Spinal Anesthesia: Observations Based on One Thousand Operations. J. A. Lazarus, C. J. Pick and A. A. Rosenthal, New York.—p. 757.
- Torsion of the Omentum. C. E. Farr and R. F. Bachmann, New York.—p. 766.
- Bilateral Snapping Thumbs. E. L. Compere, Chicago.—p. 773.

Treatment of Unhealed Burns.—Davis and Kitlowski state that the condition of patients with old unhealed burns is usually poor. They must be built up before skin grafting can be done successfully. The unhealed area should be grafted as soon as the granulations are in suitable condition, and healing

should be induced as quickly as possible. The authors believe that the small deep grafts are the best type to use, as they can be obtained from comparatively small areas of skin, some of which could not be utilized to furnish larger grafts. In these old burn cases, subsequent operative work for the release of scar contractures is almost always necessary. Scar contraction must be combated during treatment by suitable traction apparatus, so that permanent deformity will be minimized. The operative relief of scar contractures, which often occur in most carefully treated cases, should not be attempted for at least six months after healing is complete, which is about the time it takes for the scars to be loosened and softened by massage and passive motion. The authors report six cases of unhealed burns illustrating some of the difficulties encountered in treating these burns and showing the successful methods used to induce healing.

Extensive Cutaneous Burns.—McIver presents a study of sixteen patients with extensive cutaneous burns of the body and extremities, five of whom died. He observed that there was an increase in the white and red blood counts, an increase in the percentage of red cells in proportion to plasma, and a diminution in the sedimentation rate of the red cells. Blood chloride values were in essentially normal range (patients presenting the more serious burns received large volumes of physiologic solution of sodium chloride). Only two patients showed a striking increase in the nonprotein nitrogen of the blood; these two died, and the increase was most marked in the terminal stage. Certain patients showed some lowering of the total plasma protein. When the blood sugar was determined soon after the burns occurred, it was high in most cases. Carbon dioxide values were essentially normal early in the disease; two patients later developed a definite acidosis. The composition of the blister fluid closely resembled that of blood plasma. The urinary output was low and the excretion of the chlorides diminished; this was most marked in the more severely burned patients. Correction of the marked concentration of the blood by adequate fluid intake, while important, frequently does not relieve all the symptoms or prevent a fatal outcome; it seems likely that there is some other important factor in the toxemia of burns.

Tropacocaine Hydrochloride in Spinal Anesthesia.—After using various agents for spinal anesthesia, Lazarus and his associates came to the conclusion that the best results are obtained with tropacocaine hydrochloride, their judgment being based on the following observations: 1. Tropacocaine is safer and more dependable than other agents they have employed. 2. The ease with which it is administered is of decided advantage. 3. It is free from marked untoward effects. 4. Compared with other agents there is a diminished degree of shock, both operative and postoperative, which is noteworthy. 5. There is a lessened degree of nausea and vomiting when tropacocaine is used compared with other products. 6. A lessened incidence and severity of headaches is also noted in comparison. 7. It is rapid in action. In 95 per cent of their 1,000 cases, anesthesia occurred either immediately or within three minutes after the injection of tropacocaine. 8. In 99 per cent of the cases the anesthesia was complete. 9. The duration of the anesthesia is satisfactory. 10. There is a marked contrast of the physical comfort and mental attitude of the patient as compared to general anesthesia.

Archives of Ophthalmology, Chicago

9: 701-892 (May) 1933

- *Leptotrichosis Conjunctivae (Parinaud's Conjunctivitis): Artificial Cultivation of Leptotriches in Three of Four Cases. F. H. Verhoeff and M. J. King, Boston.—p. 701.
- Glaucoma and Naevus Flammeus. C. S. O'Brien and W. C. Porter, Iowa City.—p. 715.
- Tumors Affecting Optic Chiasm and Optic Tracts: Brief Critical Survey of Their Clinical and Anatomic Features. J. H. Globus, New York.—p. 729.
- Ophthalmology in Bible and in Talmud. B. L. Gordon, Atlantic City, N. J.—p. 751.
- Leber's Disease. T. B. Holloway, Philadelphia.—p. 789.
- Anterior Chamber Punctures in Relation to Intra-Ocular Tension. P. C. Kronfeld, Chicago.—p. 801.

Leptotrichosis Conjunctivae.—Verhoeff and King state that there is a disease of the conjunctiva associated with inflammatory enlargement of the preauricular gland which is a clinical and histologic entity and which is due to infection

with a leptothrix. This disease is commonly known as Parinaud's conjunctivitis, although Parinaud did not describe his three cases in sufficient detail to establish them as a complete entity. In three of four recent cases the authors succeeded in obtaining the organisms in pure culture on artificial mediums. In each of these cases the clinical and the histologic features were typical, and by special staining leptotriches were demonstrated in the tissues. Special mediums and conditions of partial oxygen tension were required for the first growths, but when once obtained the organisms grew on ordinary mediums. Inoculations of the organisms into the conjunctivae of rabbits and of guinea-pigs produced lesions clinically and histologically similar to those of the disease in human beings. The lesions, however, quickly disappeared, and were not associated with enlargement of the regional lymph nodes. The one attempt made to recover the organisms from an experimental lesion was successful.

Archives of Surgery, Chicago

26: 735-932 (May) 1933

- Plasma Cell Mastitis: Lesion Simulating Mammary Carcinoma. Clinical and Pathologic Study: Report of Ten Cases. F. E. Adair, New York.—p. 735.
- *Surgical Attempts at Increasing Sugar Tolerance. G. de Takáts and F. P. Cuthbert, Chicago.—p. 750.
- *Cardiac Innervation: Experimental and Clinical Studies. J. C. White, W. E. Garrey and J. A. Atkins, Boston.—p. 765.
- Bone Growth and Pathology as Seen in Femur (and Tibia): VII. Studies on Femur. N. W. Ingalls, Cleveland.—p. 787.
- Use of Rib Grafts for Fusion of Spinal Column. J. D. Bisgard, Chicago.—p. 796.
- Lymphoblastomas of Gastro-Intestinal Tract. T. S. Raiford, Baltimore.—p. 813.
- *Erosion of Femoral Artery, Secondary to Pathologic Fracture Due to Osteomyelitis: Report of Case in Which Common Femoral Artery Was Ligated. J. Kulowski and M. E. Pusitz, Iowa City.—p. 836.
- Blood Supply of Large Intestine: Its Surgical Considerations. J. A. Steward and F. W. Rankin, Rochester, Minn.—p. 843.
- Experimental Pleural Adhesions. S. Hirschfeld, J. Cohen and A. P. Stout, New York.—p. 892.
- Action of Normal Skin on Bacteria. Justina H. Hill and E. C. White, Baltimore.—p. 901.
- *Effect of Various Anesthetics on Cholesterol and Sugar Content of Blood. C. A. Hospers, Chicago.—p. 909.
- Fiftieth Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts and J. S. Barr, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York; G. Perkins, London, England, and P. D. Wilson, Boston.—p. 923.

Sugar Tolerance.—De Takáts and Cuthbert conducted four series of experiments with the object of increasing sugar tolerance in the normal dog: (1) ligation of the tail of the pancreas, (2) ligation of the tail of the pancreas with denervation of the suprarenals, (3) denervation of the liver and (4) celiac ganglionectomy. The first procedure laid stress on an increased or uninhibited output of insulin, which does not persist in the normal animal indefinitely. When suprarenal denervation is added, however, to the first operation, the tolerance is maintained on a high level. Denervation of the liver did not affect sugar tolerance. Celiac ganglionectomy raised the sugar tolerance to heretofore unobserved levels, and its effect has lasted as long as fourteen months unchanged. Tests for susceptibility to epinephrine and insulin showed that denervation of the liver did not alter the normal response to either of these hormones. However, suprarenal denervation and celiac ganglionectomy flattened the epinephrine-glycemia curves and markedly increased the insulin hypoglycemia. These tests indicate the profound influence of these operations on carbohydrate metabolism.

Cardiac Innervation.—Through the use of Sutton and Lueth's method of temporarily occluding a branch of the left coronary artery in dogs, White and his associates found that the resulting ischemia of the heart muscle can be counted on to produce characteristic changes in the behavior of the animal which closely resemble the manifestations of angina pectoris in man. They employed this procedure in a series of twenty-one dogs to test the effectiveness of various neurosurgical operations for interrupting the pathways of cardiac pain. The result of these experiments shows that cardiac pain is not transmitted by the vagus nerves. It is not prevented when afferent impulses from the areas to which cardiac pain is usually referred are blocked by sectioning the upper intercostal nerves on both sides. Bilateral resection of both stellate ganglia may diminish but does not block all sensory stimuli from the heart. A distinct

sensory response has been obtained in five of six animals in which this operation has been done. Bilateral removal of the sympathetic ganglions from the stellate down through the fourth thoracic ganglion or section of the upper five posterior dorsal nerve roots appears to interrupt all sensation from the heart. The motor pathways to the heart cannot be completely destroyed by bilateral excision of the stellate ganglions. The upper thoracic ganglions below the stellate ganglion send important motor and sensory fibers directly across the posterior mediastinum to the posterior cardiac plexus. When these are stimulated electrically, the heart rate may be augmented as much as 58 per cent. The authors believe that these experiments explain the frequent failures and poor results of the many different modifications of cervical sympathectomy which have been recommended for the relief of angina pectoris. No cervical sympathectomy can produce either a complete sensory or motor denervation of the heart. No operation performed through a cervical incision can give a satisfactory exposure for the excision of these important lower ganglions or the section of their communicant rami. In four patients in whom the authors resected the upper dorsal ganglions through a posterior thoracic approach, the relief of angina pectoris has been satisfactory. The operative risk involved, however, is too great for the routine use of this procedure. For the routine treatment of angina pectoris they recommend paravertebral injections of alcohol into the upper four to five thoracic ganglions and their rami. In a series of twenty-three patients treated in their clinic, injection has given excellent results in 50 per cent. Intractable angina pectoris has been reduced to a much milder form, which can be easily handled by routine medical measures, in another 30 per cent. In the remaining 20 per cent, the poor result has been obviously due to incomplete blocking by the alcohol. Their experiments on animals indicate that the patients who fail to gain relief by this relatively safe procedure can still be relieved by section of the upper thoracic spinal nerve roots.

Erosion of Femoral Artery.—Kulowski and Pusitz report the case of a girl, aged 13, in whom they ligated the common femoral artery because of secondary hemorrhage incident to a pathologic fracture in osteomyelitis. To the list of complications of osteomyelitis is added and elaborated erosion of the femoral artery. The authors emphasize the prevention of pathologic fracture in osteomyelitis by adequate protection, as advocated by Orr. They state that this extreme degree of involvement will probably not occur if adequate primary drainage is established as soon as the diagnosis of osteomyelitis is made. A primary adequate cast, in the great majority of cases, will enable the patient to develop sufficient resistance to combat the infection, after final drainage has been established. Amputation is resorted to only as a life-saving measure. The danger of secondary hemorrhage following an extensive drainage of the femur is minimal if the operator confines himself to the lateral side of the thigh and limits his manipulations to blunt dissection in the region of the great vessels. When secondary hemorrhage does occur, a window can be made and the operative field quickly exposed. The cast will minimize the patient's early excitable movements and tend to lessen the degree of hemorrhage.

Blood Cholesterol in Anesthesia.—According to the experiments of Hospers, continuous ether anesthesia in dogs and rabbits is accompanied by a hypercholesteremia that, in ordinary surgical anesthesia, reaches a peak in from sixty to ninety minutes and thereafter gradually diminishes, returning to approximately normal limits in from four to five hours. Continuous chloroform anesthesia is accompanied by a slight immediate change but by a gradual and continuous rise in the blood cholesterol proportional to the duration of the anesthesia. Ethylene and nitrous oxide anesthetics are accompanied by no changes in the blood cholesterol other than those explainable by excitement and imperfect anesthesia. Excitement is accompanied by a hypercholesteremia. This factor increases, but it is not entirely responsible for the change found under ether anesthesia. It seems to be responsible for initial changes under chloroform and for the irregularity in the blood cholesterol values under ethylene and nitrous oxide. Ether anesthesia is also accompanied by a hyperglycemia that frequently tends to be proportional to the hypercholesteremia. Chloroform, ethylene and nitrous oxide anesthetics are accompanied by a hyper-

glycemia, as is excitement without anesthesia. Ethylene and nitrous oxide, as anesthetics, seem to be more physiologic in their action than ether and chloroform.

Arkansas Medical Society Journal, Little Rock

29: 253-272 (May) 1933

- Chorea. P. F. Barbour, Louisville, Ky.—p. 253.
Practical Points in Various Manifestations of Malaria. J. H. McCurry, Cash.—p. 255.
Faults of Our Fathers. A. G. Emerson, Bald Knob.—p. 261.

Canadian Medical Association Journal, Montreal

28: 471-586 (May) 1933

- Diagnosis and Treatment of Carcinoma of Colon and Rectum. D. F. Jones, Boston.—p. 471.
Effect of Tracheal Compression on Thyroid Gland. A. C. Abbott, A. M. Goodwin and Sara Meltzer, Winnipeg, Manit.—p. 481.
Parathyroid Dysfunction: Report of Case Treated with Parathormone and Irradiated Ergosterol. S. Ortenberg, Montreal.—p. 490.
Effect of Colloidal Thorium on Blood Picture. R. Gotlieb, Montreal.—p. 496.
Canadian Formulary and Reference Companion. V. E. Henderson and G. H. W. Lucas, Toronto.—p. 497.
Disturbances Produced in Rectum by Disease Elsewhere. E. A. Daniels, Montreal.—p. 499.
*Isolation of *Corynebacterium Diphtheriae* and Diphtheroids from Carriers, Cases and Normals. Marion M. Johnston and Mildred J. Kaake, Toronto.—p. 505.
Diabetes Insipidus: Case Report with Discussion. J. E. Long, Toronto.—p. 508.
Toxemias of Pregnancy. W. J. Stevens, Ottawa, Ont.—p. 513.
Functional Dyspepsia. J. W. Scott, Edmonton, Alta.—p. 518.
Some Brief Notes on Diagnosis and Treatment of Bone Tumors. B. L. Coley, New York.—p. 521.
*Digitalis Administration. D. M. Baltzan, Saskatoon, Sask.—p. 527.
Some Considerations Relating to Pain and Tenderness in Acute Mastoiditis. L. S. Barnes, Toronto.—p. 533.

Isolation of *Corynebacterium Diphtheriae*.—Johnston and Kaake isolated twenty-five strains of *Corynebacterium diphtheriae*, based on morphologic and carbohydrate reactions, from twenty-eight child carriers, three nurses and one employee. Virulence tests performed on twenty-two strains yielded twenty, or 90 per cent, that were positive. Eighteen strains of *Corynebacterium diphtheriae* were isolated from twenty clinical diphtheria patients. Virulence tests carried out with twelve strains yielded ten virulent strains. From 166 normal children, nine strains of avirulent micro-organisms that correspond morphologically and by carbohydrate tests with *Corynebacterium diphtheriae* were cultivated; diphtheroids were isolated from thirty-four, or 20 per cent, and observed in forty-four, or 26 per cent, of this population. *Corynebacterium hoffmanni* was more prevalent in nose than in throat cultures. The avirulent strains of *Corynebacterium diphtheriae*, whether from a patient, a carrier or a normal person, exhibited the characteristics of a "rough" colony. The coagulated blood tellurite medium prepared by the authors' method, essentially a modification of the method described by Anderson and his co-workers, is not infallible for isolation of *Corynebacterium diphtheriae* or of the diphtheroids, since nineteen out of ninety-six cultures failed to grow.

Digitalis Administration.—Baltzan states that, when digitalis is useful, there is no contraindication except in the rare case of the Adams-Stokes syndrome and the rare individual intolerance. A normal regular pulse is not against its use, nor are existing hyperpiesis, heart block or pulsus alternans. Digitalis should not be used as a routine in preparation for surgical operations unless there is congestive failure, in post-operative emergencies or collapse with anesthesia, in the early stage of coronary catastrophes, in the thyrotoxic heart unless there is coincident heart disease, as a routine in febrile conditions unless congestive failure is imminent, in neurocirculatory asthenia, and in the presence of undesirable effects or toxic symptoms. Cardiac failures requiring full digitalization are acute congestive heart failure with or without arrhythmia, auricular fibrillation with high ventricular rate, auricular flutter with low grade block, and tachycardia that is not primarily thyrotoxic or febrile. Cardiac decompensations requiring partial (therapeutic) digitalization are chronic auricular fibrillations with moderate tachycardia and pulse deficit, circulatory decompensations (passive congestions, static edemas) that do better with than without digitalis, and incipient heart failures complicating fevers or even thyrotoxicosis. Cardiac incompetences requiring supportive (tonic) digitalization are rheumatic heart disease with history of previous broken compensation,

enlarged heart with limited reserve force or recurrent cardiac asthma (the hypertensive case is not excluded), old people with dyspnea (old coronary apoplexies are not excluded if there is circulatory impairment), and some arrhythmias and extrasystoles, and sometimes in anticipation of paroxysmal fibrillation and flutter.

Colorado Medicine, Denver

30: 169-204 (May) 1933

- Pneumonia in Childhood. I. A. Abt, Chicago.—p. 173.
Relation of Radiology to Other Fields of Medicine. E. H. Skinner, Kansas City, Mo.—p. 179.
Rest and Shot Bags in Pulmonary Tuberculosis. G. B. Webb, Colorado Springs.—p. 183.
Neurologic Diagnosis of Pernicious Anemia, with Remarks on Treatment. L. E. Daniels, Denver.—p. 185.

Georgia Medical Association Journal, Atlanta

22: 161-200 (May) 1933

- Organized Medicine. M. M. Head, Zebulon.—p. 161.
Effects of Injections of Ovarian Follicular and Anterior Pituitary Hormones on Conception and Pregnancy in Laboratory Animals. G. L. Kelly, Augusta.—p. 164.
Malignant Endocarditis: Report of Case. A. Dimmock, Atlanta.—p. 174.
Common Duct Obstruction: Report of Ten Cases. L. Grove and J. C. Read, Atlanta.—p. 178.
Delayed Secondary Appendiceal Abscess: Report of Case. J. C. Ivey and W. W. Daniel, Atlanta.—p. 182.
Blood Pressure in Five Hundred Physical Examinations. R. L. Carter, Thomaston.—p. 186.

Illinois Medical Journal, Chicago

63: 389-488 (May) 1933

- Medical Economics and Mental Disorders. J. H. Hutton, Chicago.—p. 441.
Health Education Over the Radio. W. W. Bauer, Chicago.—p. 444.
Educational Committee of the Illinois State Medical Society: Its Aims and Accomplishments. C. J. Whalen, Chicago.—p. 450.
Carcinoma of the Bladder. H. L. Kretschmer, Chicago.—p. 454.
Hay Fever in Chicago and Suburbs: Clinical, Field and Air Observations. S. M. Feinberg, Chicago, and O. C. Durham, North Chicago.—p. 464.
Botulism. W. E. Cary, Chicago.—p. 472.
Ophthalmologic Problems in General Practice. P. A. Halper, Chicago.—p. 473.
*Dermatitis Repens: Treatment with Intradermal Injections of Staphylococcus Antivirus Besredka. S. J. Zakon, Chicago.—p. 480.
Biopsy in Mammary Cancer. J. Ewing, New York.—p. 482.

Dermatitis Repens.—Zakon reports a case of dermatitis repens of six years' duration with recovery treated by intradermal injections of Besredka's antiviral. In the hope of producing an immunity of the skin to staphylococci, treatments with intradermal injections of Besredka's staphylococcus antiviral were given at first twice a week, later once a week. A stock staphylococcus antiviral was used. The dosage was gradually increased from 0.1 to 0.5 cc. The sites of injection were the flexor surface of the forearms. Each injection produced a definite local reaction in the form of an inflammatory infiltrated papule surrounded by an erythematous zone. The reaction usually reached its height in forty-eight hours and then gradually subsided. Injections were given for more than five months. Locally, a 10 per cent boric acid petrolatum ointment was used. Since the condition cleared up, the affected hand and wrist have increased in size. Observation at frequent intervals has revealed no recurrence.

Indiana State Medical Assn. Journal, Indianapolis

26: 209-258 (May 1) 1933

- Roentgenology from Surgical Standpoint. R. L. Lochry, Indianapolis.—p. 212.
Atelectasis. W. G. Crawford, Terre Haute.—p. 213.
Hermal Gangrenous Appendicitis. S. D. Malouf, Peru.—p. 218.
Medical Poor Relief in Grant County. E. O. Harrold, H. E. List and E. F. Jones, Marion.—p. 221.
Female Sex Hormones. M. V. Kahler, Indianapolis.—p. 224.
The Chiropractic Situation. F. Jett and A. W. Cavins, Terre Haute.—p. 229.

Iowa State Medical Society Journal, Des Moines

23: 247-298 (May) 1933

- Diagnostic Errors in Gynecology. E. Von Graff, Iowa City.—p. 247.
Foreign Proteins as an Aid in Ocular Infections. E. Cobb, Marshalltown.—p. 250.
Pernicious Anemia. D. M. Blum, Des Moines.—p. 255.
Postmenopausal Vaginal Bleeding. P. T. Brown, Iowa City.—p. 261.
Symptoms and Diagnosis of Heterophoria. C. E. Chenoweth, Mason City.—p. 262.
Visual Field Changes: Three-Dimensional Model for Demonstration Purposes. A. M. Dean, Council Bluffs.—p. 268.

Journal of Bacteriology, Baltimore

25: 435-544 (May) 1933

- Pipet Electrode for Determination of pH in Biologic Fluids. H. E. Goresline, Washington, D. C.—p. 435.
Some Results on Use of Crystal Violet in Bacteriologic Culture Mediums for Water Analysis. C. N. Stark and C. W. England, Ithaca, N. Y.—p. 439.
Biology of Tubercle Bacillus. III. Does the So-Called Fatty Capsule Serve to Protect the Tubercle Bacillus? J. Weinzierl, Seattle.—p. 447.
Species of Escherichia-Aerobacter Organisms Responsible for Some Defects in Dairy Products. W. B. Sarles and B. W. Hammer, Ames, Iowa.—p. 461.
Germicidal Efficiency of Sodium Hydroxide. E. C. McCulloch, Madison, Wis.—p. 469.
Oxidation-Reduction Potentials in Cultures of Staphylococcus Aureus. C. E. Clifton, Stanford University, Calif.—p. 495.
Studies on Cultural Requirements of Bacteria: III. Diphtheria Bacillus. J. H. Mueller, Katharine S. Klise, E. F. Porter and A. Graybiel, Boston.—p. 509.
Action of Hexylresorcinol on Bacteria in Certain Food Products. C. F. Poe and Hazel A. Fehlmann, Boulder, Colo.—p. 521.
Further Studies on Differentiation of Human and Animal Strains of Hemolytic Streptococci. P. R. Edwards, Lexington, Ky.—p. 527.
Large-Celled Dissociative Form of Escherichia Coli and Its Relation to So-Called Pettenkofer Bodies. R. V. Hussong, Ithaca, N. Y.—p. 537.

Journal of Experimental Medicine, New York

57: 705-880 (May 1) 1933

- Effect of Restriction of Protein Intake on Serum Protein Concentration of the Rat. A. L. Bloomfield, San Francisco.—p. 705.
Changes in Bacterial Volume as Result of Specific Agglutination. F. S. Jones and R. B. Little, Princeton, N. J.—p. 721.
Significance of Changes in Antigenic Volume as Result of Specific Agglutination. F. S. Jones and R. B. Little, Princeton, N. J.—p. 729.
Further Observations on Cultivation of Vaccine Virus in Lifeless Mediums. T. M. Rivers and S. M. Ward, New York.—p. 741.
Lymphatic Participation in Human Cutaneous Phenomena: Study of Minute Lymphatics of Living Skin. S. S. Hudack and P. D. McMaster, New York.—p. 751.
Electrolyte Balance Studies in Adrenalectomized Dogs, with Particular Reference to Excretion of Sodium. R. F. Loeb, D. W. Atchley, Ethel M. Benedict and Jessica Leland, New York.—p. 775.
Inherited and Acquired Factors in Resistance to Infection: I. Development of Resistant and Susceptible Lines of Mice Through Selective Breeding. L. T. Webster, New York.—p. 793.
Id.: II. Comparison of Mice Inherently Resistant or Susceptible to Bacillus Enteritidis Infection with Respect to Fertility, Weight and Susceptibility to Various Routes and Types of Infection. L. T. Webster, New York.—p. 819.
*Comparative Study of Subcutaneous Nodules in Rheumatic Fever and Rheumatoid Arthritis. M. H. Dawson, New York.—p. 845.
*Phenomenon of Local Skin Reactivity to Bacterial Filtrates in Its Relation to Bacterial Hypersensitiveness. G. Schwartzman, New York.—p. 859.
Studies on Etiology of Spontaneous Conjunctival Folliculosis of Monkeys: II. Bacteriologic Experiments. P. K. Olitsky, J. T. Syverton and J. R. Tyler, New York.—p. 871.

Nodules in Rheumatic Fever and Rheumatoid Arthritis.

—Dawson presents a comparative study on the subcutaneous nodules in rheumatic fever and rheumatoid arthritis. He states that these lesions are highly characteristic of the two diseases and that they represent different phases of the same fundamental pathologic process. However, the presence of closely related or even identical lesions in two separate clinical entities cannot be considered valid evidence in support of the hypothesis that the two diseases are etiologically related. Comparative clinical studies on the relationship of rheumatic fever and rheumatoid arthritis will be reported later. These studies, as well as serologic investigations on the two diseases which have been previously reported, lend further support to the conception that rheumatic fever and rheumatoid arthritis are intimately related and possibly different responses of affected persons to the same etiologic agent.

Local Skin Reactivity to Bacterial Filtrates.—The observations of Schwartzman demonstrate that injection of normal horse serum into skin areas of rabbits prepared twenty-four hours previously by injection of horse serum, histamine diluted 1:1,000 and sterile meat infusion broth did not elicit any hemorrhagic necrosis. Moreover, the horse serum failed to elicit the reaction in areas prepared with bacterial filtrates devoid of skin preparatory potency (i. e. Streptococcus viridans culture filtrate). It was necessary to allow a definite incubation period for the preparatory effect of a potent bacterial filtrate. The results were negative if the injections immediately followed each other or were carried out within six hours. The interval of time successfully employed was twenty-four hours. The sensitization of rabbits was accomplished by single intravenous injections seven days prior to the tests. Shorter incubation periods were insufficient. The reaction observed was specific.

Reinjection of prepared areas with sheep, guinea-pig and human serum in rabbits sensitized by single injections of horse serum elicited no reactions. Some of the rabbits were bled on the day of preparatory injections and the serums tested for precipitins against horse serum. There was no apparent parallelism between the precipitin titers of the various serums and the incidence of the reactions. These were easily obtained in most of the rabbits tested. Experiments were carried out in order to determine whether the reaction could be passively transferred to normal rabbits. A number of experiments clearly demonstrated the specificity of the passive transfer. In the experiment with pneumococcus type III filtrate, serologic type specificity was observed. No incubation period was required for the passive sensitization. In the case of actively sensitized rabbits it was necessary to allow a definite incubation period for the preparatory effect of the bacterial filtrates.

Journal of Pharmacology & Exper. Therap., Baltimore

48: 1-125 (May) 1933

- Study of Effects of Agave Concentrate in Treatment of Experimental Nephritis Induced in Animals: I. Nephritis Induced in Rabbits by Use of Tartrates. H. D. Jones, assisted by K. D. Crane, G. B. Johnston and C. R. Henry, Auburn, Ala.—p. 1.
- Id.: II. Nephritis Induced in Dogs by Use of Uranium Nitrate. H. D. Jones, assisted by R. C. Hughes and G. B. Johnston, Auburn, Ala.—p. 25.
- Effects of Some Quaternary Ammonium and Analogous Compounds on Autonomic Nervous System. R. Hunt and R. R. Renshaw, New York.—p. 51.
- Interaction of Histamine and Nicotine on Intestine. F. Bernheim, Durham, N. C.—p. 67.
- Action of Veratrine and Urethane on Tissue Oxidations. F. Bernheim and Mary L. C. Bernheim, Durham, N. C.—p. 73.
- Physiologic Action of Norconessine. A. C. White, Beckenham, Kent, England.—p. 79.
- Effect of Separated Fractions of Posterior Lobe of Pituitary on Fat Content of Liver. A. C. White, Beckenham, Kent, England.—p. 89.
- Contribution to Pharmacology of Anabesine. H. B. Haag, Richmond, Va.—p. 95.
- Ethers and Thio-Ethers of Triethylammonium Compounds. R. Hunt and R. R. Renshaw, New York.—p. 105.

Kentucky Medical Journal, Bowling Green

31: 223-270 (May) 1933

- Agranulocytosis. C. H. Fortune, Lexington.—p. 225.
- Lymphatic Leukemia. T. J. Marshall, Paducah.—p. 229.
- Indications in Anemia for Surgery of the Spleen. A. R. Quigley, Maysville.—p. 230.
- Symposium on the New-Born: Conservative Methods of Treatment of Asphyxia Neonatorum. Nora D. Dean, Louisville.—p. 233.
- Id.: Hemorrhagic Diseases of the New-Born. L. Palmer, Louisville.—p. 236.
- Id.: Intracranial Birth Injuries. J. H. Pritchett, Louisville.—p. 237.
- Id.: Infection in the New-Born. P. F. Barbour, Louisville.—p. 239.
- Rectal Diseases in General Practice. R. C. Alley, Lexington.—p. 246.
- Gallstones Simulating Appendicitis: Report of Case. L. W. Frank, Louisville.—p. 248.
- Eczema. R. L. Kelly, Louisville.—p. 249.
- Colon Bacillus: A Comparison. J. Martin, Cynthiana.—p. 254.
- Chronic Pancreatitis with Diabetes and Obstructive Jaundice. W. O. Johnson, Louisville.—p. 256.
- When a Man Is a Man. J. F. Dunn, Arlington.—p. 258.
- Symposium on Obstetrics: Complications of Pregnancy, Early and Late Hemorrhages. L. C. Redmon, Lexington.—p. 260.
- Id.: The Puerperium and Its Complications. N. C. Witt, Franklin.—p. 263.

Maine Medical Journal, Portland

24: 53-68 (April) 1933

- Use of Neutral Ammonium Tartrate in Treatment of Lime Burns of the Eye. W. J. Gilbert and P. J. Mundie, Calais.—p. 55.
- *Ocular Signs in Brain Injuries. H. F. Hill, Waterville.—p. 58.
- Diabetic Coma: Report of Four Cases. E. R. Blaisdell, Portland.—p. 63.

Ocular Signs in Brain Injuries.—Hill states that there should be an expert ophthalmologist in daily attendance on all cases of cerebral trauma. Pupillary changes are important. A dilated pupil indicates the side of the lesion. Fixed pupils denote a serious prognosis. With fracture of the base, care must be taken to determine whether there is a fissure through the optic canal. Roentgenograms are unsatisfactory at the present time. Diagnosis necessarily must be made with the ophthalmoscope and by field vision tests. The fundi should be repeatedly examined. The disk shows changes early with increased intracranial pressure. Visual fields aid in localization and give information as to progress and prognosis. Charting of the blind

spot gives evidence of increased intracranial pressure even before changes can be seen in the disk with the ophthalmoscope. In industrial cases, especially, the permanent visual defects should be charted. These are found in from 25 to 30 per cent of all serious cases.

Medicine, Baltimore

12: 83-244 (May) 1933

- Acute Poliomyelitis as Primary Disease of Central Nervous System: Reconsideration of Pathology, Symptomatology and Treatment, Based on Hypothesis of Axonal Propagation of Infective Agent. H. K. Faber, San Francisco.—p. 83.
- *Idiopathic Hypochromic Anemia. M. M. Wintrobe and R. T. Beebe, Baltimore.—p. 187.

Idiopathic Hypochromic Anemia.—On the basis of 473 cases of a microcytic, hypochromic type of anemia usually associated with achlorhydia, which have been described in the literature, and of twenty-five cases personally observed, Wintrobe and Beebe discuss the etiologic features, symptomatology, laboratory observations, pathology, diagnosis, treatment, course and prognosis, as well as pathogenesis of this anemia. It is defined as an anemia of unknown etiology occurring especially, but not exclusively, in women from the third to the fifth decades of life and characterized by an insidious onset, long duration, symptoms such as are common to all anemias and, in addition, glossitis, stomatitis, dysphagia, paresthesias without objective neurologic observations, and often splenomegaly and koilonychia. In the great majority of cases there is evidence of disturbed gastric secretion (achlorhydia). The anemia is characterized by microcytosis and hypochromia, ready response to adequate iron therapy and, frequently, a tendency to relapse when treatment is discontinued. The evidence so far available suggests that the fundamental disturbance may be defective gastric secretion with faulty utilization or synthesis from the diet of material which is necessary for hemoglobin formation. Anemia possibly develops because the demands for hemoglobin are in excess of the capacity of the individual to meet them. The requirements of menstruation and repeated pregnancies probably explain the preponderance of this type of anemia in women. Such factors as a diet deficient in foods potent for hemoglobin formation, excessive menstrual flow, blood loss from hemorrhoids, or dysphagia and consequent lack of food, are considered secondary aggravating factors and not primary etiologic agents. The authors point out the advisability of recognizing this condition as a single entity.

Minnesota Medicine, St. Paul

16: 287-378 (May) 1933

- Status of Obstetric Practice in Minnesota. J. C. Litzenberg, Minneapolis.—p. 287.
- Leukemia and Its Treatment. L. H. Fredricks, Bismarck, N. D.—p. 296.
- Agranulocytosis. E. T. F. Richards and K. Ikeda, St. Paul.—p. 299.
- Acute Mononucleosis or Glandular Fever: Report of Case. R. C. Logefell, Minneapolis.—p. 305.
- *Gastric and Duodenal Ulcer: Results of Immunization Treatment. A. R. Hufford, Grand Rapids, Mich.—p. 310.
- *Use of Mucin in Treatment of Peptic Ulcer. A. B. Rivers and Frances R. Vanzant, Rochester.—p. 314.
- Multiple Myeloma: Precipitation of Bence-Jones Protein in Blood. W. H. Karlins and A. R. Lundquist, Webster, S. D.—p. 318.
- Some Clinical Aspects of Spinal Injuries. E. M. Jones, St. Paul.—p. 319.
- The Human Foot: Functional Development and Weaknesses. M. S. Henderson, Rochester.—p. 323.
- Present-Day Cancer Problems. F. L. Rector, Evanston, Ill.—p. 330.
- *Undulant Fever Treated with Metaphen. A. C. Fortney, Fargo, N. D.—p. 335.

Gastric and Duodenal Ulcer.—From May 1927 to May 1931, Hufford treated 154 patients suffering from gastric and duodenal ulcers. The treatment was chiefly medical and consisted of a well balanced bland diet, a modification of the Sippy diet for ulcer recommended for the fourth week. The quantity and variety of food were gradually increased until the calories were sufficient for the patient to maintain weight and strength. Foods rich in vitamins A, B and C and in minerals were carefully retained in the diet. When necessary, the stomach was aspirated nightly and lavage was continued until secretions at night were controlled. An attempt was made to remove all evident foci of infection from the patients who were treated either surgically or medically, and all patients who could and would take the ulcer vaccine were given subcutaneous injections of it two times a week. The dosage was started with 0.1 cc.

and was increased from 0.1 to 0.2 cc. with each injection until 1 cc. was reached, and this was continued for from eight to ten consecutive weeks. Of the entire group of 154 patients, 116 were treated with the stock ulcer vaccine in addition to the diet and the oral medication of alkaline powders, antispasmodic drugs and, when necessary, alkaline liquid petrolatum and agar. All evident foci of infection were removed in seventy-one of this group, and ulcer has recurred in two, an incidence of 2.8 per cent. Forty-five of the 116 patients received inoculations of ulcer vaccine but did not have all foci of infection eradicated, and the ulcers of eight (17.8 per cent) recurred in from one to three years. Of the thirty-four patients who did not receive inoculations of ulcer vaccine in addition to the usual regimen, eighteen had all evident foci of infection removed, and the ulcers of eight (44.4 per cent) have recurred to date. Of the sixteen patients who did not have foci of infection completely eradicated, the ulcers of thirteen (81 per cent) recurred. Four patients of the 154 received surgical treatment only. The clinical results demonstrate that ulcer vaccine and the removal of foci of infection are two indispensable adjuncts to the usual dietetic and hygienic measures and offer more successful means of combating this chronic and recurring malady.

Mucin in Treatment of Peptic Ulcer.—Rivers and Vanzant used mucin in more than 150 cases of peptic ulcer. After several doses, some of the patients refused it because of the objectionable taste or because it made them more uncomfortable. A few of them were nauseated, and vomiting and diarrhea followed. In other cases, symptoms were not controlled and, usually, gastric acidity was not materially reduced. The authors observed that mucin seems to be most beneficial when combined with other approved methods of treatment, such as a nonstimulating diet, sedatives and a small amount of alkali. They place the patients on a regimen similar to that instituted by Sippy, but using less alkali. Milk is given every hour. At 10:30 a. m., 4:30 p. m. and 7:30 p. m., 30 Gm. of mucin is substituted for the usual hourly dose of alkali. The amount of alkali used varies, but it seldom exceeds 120 grains (from 7 to 8 Gm.) daily. After three or four days, this regimen is modified; the patients are permitted to spend part of their time out of bed, and a more liberal diet, consisting of puréed vegetables, cereals and various bland foods, is prescribed. Instead of taking milk hourly they take it twice between meals. Alkalis are taken three times daily, from 12 to 15 grains (0.8 to 1 Gm.) of soda, a bismuth compound or magnesia one hour after meals, and mucin is taken an hour before meals and at 10 p. m., in doses of from 20 to 25 Gm. After three or four days of this diet, an ambulatory regimen is substituted. The diet is limited to bland foods. Milk is given once between meals, and 10 or 15 grains (0.65 or 1 Gm.) of alkali may be used an hour after each meal. Mucin is given one hour before the meal and before the patient retires; from 60 to 70 Gm. is used daily. Throughout the treatment patients are encouraged to get as much rest and relaxation as possible, and this is facilitated by means of liberal amounts of sedatives, such as bromides and the barbiturates. Usually, atropine is combined with the other drugs. About 50 per cent of the patients responded favorably when mucin was employed in their treatment. The authors are therefore encouraged to continue its use and hope to ascertain the types of cases in which good results may be expected. They believe that in the presence of complications, such as obstruction, repeated gross hemorrhages and evidence of malignant disorders or penetration, or if nonsurgical methods have proved of no avail, treatment will be more safely carried out by operative measures.

Undulant Fever Treated with Metaphen.—Fortney presents a case of undulant fever which was observed from its onset and which was treated with metaphen 1:1,000 intravenously. The clinical duration of the disease was exactly ten days and the temperature became normal six days after the use of metaphen was instituted. No other drugs were used. No reactions followed the use of the drug. The fact that the drug was first used shortly after the clinical onset of the disease may account for the good response and one can only conjecture what results might be expected in a chronic case of undulant fever. The author believes that its use is indicated in all cases. The high agglutination titer (1:2,560), one month following discharge from the hospital, is striking.

Southern Medical Journal, Birmingham, Ala.

26: 379-480 (May) 1933

- Clinical Aspects of Diverticulitis of Colon. F. D. Gorham, St. Louis.—p. 379.
- *Atrophic and Hypertrophic Arthritis of Spine. A. R. Shands, Jr., and M. O. Oates, Durham, N. C.—p. 384.
- Bone Metastases from Carcinoma of Prostate. W. K. Kalbfleisch, Wheeling, W. Va.—p. 391.
- Glaucoma: Complications of Hypermature Cataract. R. K. Daily, Houston, Texas.—p. 396.
- Myocardial Syphilis. J. C. Norris, Atlanta, Ga.—p. 399.
- Rocky Mountain Spotted Fever (Eastern Type) in Southern States: Report of Six Cases in Tennessee. W. Litterer, Nashville, Tenn.—p. 407.
- Rocky Mountain Spotted Fever. J. S. Crutcher, Jr., Nashville, Tenn.—p. 415.
- Use of Embryo Chick in Investigation of Certain Pathologic Problems. E. W. Goodpasture, Nashville, Tenn.—p. 418.
- Study of Sinuses in a Group of Patients Complaining of Vague Chest Symptoms. S. H. Sanders, Memphis, Tenn.—p. 420.
- *Effective Method of Protein Fever Treatment in Neurosyphilis. M. O. Nelson, Tulsa, Okla.—p. 424.
- Sclerosing Treatment of Varicose Veins. H. R. Black and H. S. Black, Spartanburg, S. C.—p. 429.
- Cerebral Hemorrhage: Medical Aspects. C. Jamison, New Orleans.—p. 431.
- Mental Hygiene of Involutional Period. H. Daspsit, New Orleans.—p. 433.
- Pylorospasm Due to Allergy: Simulating Infantile Pyloric Stenosis. R. M. Balyeat and C. M. Pounders, Oklahoma City.—p. 436.
- Influence of Ruy Diaz De Isla on Question of American Origin of Syphilis: A Friendly Polemic. C. S. Butler and J. A. Biello, Brooklyn.—p. 438.
- *Effects of Milk Injections in Chronic Pelvic Inflammatory Disease. E. H. Greene, Atlanta, Ga.—p. 443.

Arthritis of Spine.—Shands and Oates point out that, in a review of 668 cases in which roentgenograms of the spine were required, 243, or 36.4 per cent, of the cases showed arthritis of the spine. A classification of these cases by roentgen and clinical observations showed 67.4 per cent to be in the hypertrophic group and 32.1 per cent in the atrophic group. Of the patients, 57.6 per cent were men and 42.4 per cent were women. These cases have been analyzed according to the area of the spine involved. The average age at the onset of the sacro-iliac and lumbosacral cases is 33 years; of the dorsal and lumbar cases 42 years and of the cervical cases 46 years. Trauma as an etiologic factor was reported in 40 per cent of the sacro-iliac and lumbosacral cases, and in 23 per cent of the other areas of the spine. Radiation of pain was found to be more common in the sacro-iliac and cervical spine, and less common in the dorsal spine cases. In the cases of arthritis of the lumbar spine, sacro-iliac and lumbosacral areas, symptoms more nearly equaled the signs, and in the cervical spine symptoms are more often present without signs. The authors made a correlation of the roentgen changes with the signs and symptoms and a separate analysis of sixteen Strümpell-Marie cases and of one von Bechterew case.

Protein Fever Treatment in Neurosyphilis.—In the treatment of neurosyphilis as previously reported, Nelson gives for each paroxysm of fever two separate intravenous injections of combined typhoid vaccine instead of one. After administration of the first dose, which is of a size calculated to cause slight fever, two or three hours is allowed to elapse for the patient's temperature to reach its height, this point being determined by taking the temperature every twenty minutes. At the peak of the fever induced by the first dose, the second injection is given. Following the second dose, which seems to "explode" a physiologic charge created by the first, the patient's temperature usually rockets to the levels characteristic of malaria: 105, 106 or even 107 F. The author states that, by means of this method, fever consistently higher than that produced by ordinary methods is obtainable. Treatment by this method is less dangerous than by malaria, is more convenient and widely available, and at the same time probably makes use of bodily immunity reactions similar to those induced by malaria. Treatment of patients with resistant neurosyphilis by this method has been followed by improvement equal to that observed in similar cases treated by malaria.

Effects of Milk Injections in Pelvic Disease.—Greene states that the intramuscular injection of sterile milk is a valuable adjunct in the treatment of chronic pelvic inflammatory disease. He submits graphs showing that the injection of milk is followed by leukocytosis, usually within four hours. Fresh milk is more effective than the commercial preparation

employed. Patients feel better, gain in weight and continue their routine work after the injections. Major operations occasionally are avoided. Preoperative injections of milk make operations somewhat less difficult and abbreviate the period of convalescence. In 18,270 injections given over a period of five years there has been no evidence of untoward effect in any individual.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 811-858 (May 13) 1933

- Encephalitis, Poli-encephalitis and Vaccinal Encephalitis in Children. C. P. Lapege.—p. 811.
Treatment of Carcinoma of Breast by Radium Emanation. H. S. Souttar.—p. 813.
*Intradermal Tuberculin Test in Nontuberculous Adults. S. L. Cummins and A. C. Evans.—p. 815.
*Reinvestigation of Children Previously Examined by Tuberculin Tests. W. E. Lloyd and A. Margaret C. Macpherson.—p. 818.
Severe Anemia with Achlorhydria. C. H. Melland.—p. 820.
Congenital Absence of Vagina. N. Hodgson.—p. 822.
Note on Treatment of Impetigo. J. L. Newman.—p. 823.

Intradermal Tuberculin Test.—Cummins and Evans observed the variations in tuberculin sensitivity manifested by adults free from clinically recognizable tuberculosis and compared the observations in the nontuberculous with those in the clinically tuberculous groups. They noticed marked individual variations in cutaneous tuberculin sensitivity. These variations were apparent both in regard to end-point reactivity with serial dilutions and to the intensity of reaction as evaluated through measurement of the size of the area of reaction. In the groups of persons free from clinically apparent tuberculosis the variations were not associated with differences in general health, as tested by the rate of blood sedimentation in contrasted groups. In the healthy groups the women showed a more marked reactivity than the men, but both the men and the women of European race showed less reactivity than that recorded for South African native mine recruits in the report of the South African Tuberculosis Research Committee (1932). Young adult women are liable to a more acute and severe type of tuberculosis than corresponding male groups, and South African mine natives exhibit a still more marked liability to fatal acute tuberculosis. In other words, pronounced cutaneous tuberculin sensitivity in a group appears to be associated with liability to severe tuberculosis. In actively tuberculous groups, the reactivity of florid cases of the disease is greater than the reactivity of nontuberculous persons; and the reactivity of tuberculous men appears to be greater than that of tuberculous women in the small groups tested. Here, however, the observations are complicated by the gradual onset of "anergy," as the cases progress in severity and as the systemic disturbance increases, which tends to be more rapid in young women. This perhaps explains their lower sensitivity in the tuberculous group. The anergic state in tuberculous persons is associated not only with loss of tuberculin reactivity but also with marked increase in the rate of sedimentation of the red blood corpuscles.

Reinvestigation After Tuberculin Tests.—Lloyd and Macpherson state that the results of the repetition of the tuberculin test on 700 children whose ages varied from 1 to 15 years at the time of the first test show that allergy, once it is produced, persists in over 96 per cent of cases throughout childhood. A comparison of the different dilutions of old tuberculin which will produce a positive tuberculin reaction demonstrates the fact that there is a tendency for the degree of sensitivity to increase after an interval of one and a half to two years. Further, on separating the children into contact and noncontact groups, it is evident that a high degree of sensitivity in contact children is reached at an early age, whereas in a large proportion of noncontact children this degree of allergy is not reached at any age. The absence of any development of clinical tuberculosis in 700 children during the period of one and a half to two years is interesting, more especially as this number includes two children of from 1 to 2 years of age and seven under 3 years. That these children have remained apparently healthy throws doubt on the view held by some authors that a positive tuberculin reaction in a child under 2 years of age is evidence of active tuberculous disease.

East African Medical Journal, Nairobi

10: 37-66 (May) 1933

- Observations on Health in Relation to Diet in His Majesty's Central Prison, Uganda: I. Prison Diets and Morbidity. J. P. Mitchell.—p. 38.
Id.: II. Ocular Manifestations of Vitamin A Deficiency. H. B. Owen.—p. 53.
*Id.: III. New Cutaneous Manifestation in Syndrome of Vitamin A Deficiency. L. J. A. Loewenthal.—p. 58.

Cutaneous Manifestation in Vitamin A Deficiency.—

Loewenthal observed a number of persons who presented a heretofore undescribed dermatosis, associated in the great majority of cases with the clinical manifestations of vitamin A deficiency. The dermatosis consists of a dryness of the whole skin, with the exception of the face, associated with a papular eruption most apparent on the extensor surfaces. The papules are smooth, black and shiny, and extremely irritable. Histologically, these papules are found to have as their nucleus an altered pilosebaceous follicle, which is sealed with a comedo and shows more or less evidence of perifolliculitis. These papules show no tendency to suppurate. The patients (seventy-four) were treated with cod liver oil in doses of 1 ounce (30 cc.) each daily, their diet remaining unchanged. After nine weeks, cure resulted in 98.6 per cent. No local treatment was given throughout this period. The only previous reference to cutaneous changes in vitamin A deficiency is that of Pillat, who describes a decay of the skin associated with multiple abscesses.

Glasgow Medical Journal

1: 145-184 (May) 1933

- Eczema: Survey of Position. J. F. Smith.—p. 145.
Complaints of Patients with Senile Cataract. W. J. B. Riddell.—p. 154.

Indian Journal of Medical Research, Calcutta

20: 921-1242 (April) 1933

- Filariasis in Trivandrum. M. O. T. Iyengar.—p. 921.
*Cholesterosis of Gallbladder in Indians: Clinical Study in Human Subjects and an Experimental Study in Rabbits. A. C. Ghose.—p. 939.
Bacterial Infection of Gallbladder: Clinical Study in Human Subjects and an Experimental Study in Rabbits. A. C. Ghose.—p. 951.
Interaction of Food and Sanitary Condition in Causation and Prevention of Thyroid Disease. R. McCarrison.—p. 957.
Hydrogen Ion Concentration in Organs and Body Fluids of Scorbutic Guinea-Pigs. R. McCarrison and G. Sankaran.—p. 971.
Rat Flea Survey of Mysore State. P. V. S. Iyer.—p. 975.
Influence of Blood Group in Certain Pathologic States. P. N. Mitra.—p. 995.
Action of Quinamine on Heart. J. C. David and C. Vared.—p. 1005.
*Clinical Value of Rose Bengal Test for Determination of Total Functional Capacity of Liver. M. V. R. Rao.—p. 1009.
Metabolism of Carotene in Different Animals. B. Ahmad and K. S. Malik.—p. 1033.
Sun Disinfestation of Grains as Measure in Prevention of Plague: Note. C. G. Pandit, K. P. Menon and P. V. S. Iyer.—p. 1039.
Vitamin Content of Indian Mango. B. C. Guha and P. N. Chakravorty.—p. 1045.
Finding of Toxoplasma Cuniculi in Two Experimental Rabbits: Note. K. V. Krishnan and C. Lal.—p. 1049.
Reversible Oxidation: Reduction of Glutathione in Liver: Note. K. C. Sen.—p. 1051.
*Complement Fixation in Variola. K. V. Venkataraman.—p. 1063.
Seasonal Prevalence of Rats and Rat Fleas in Parts of South India. H. H. King and P. V. S. Iyer.—p. 1067.
Survey of Flora and Fauna of Water Supplies of Madras Presidency. S. A. Rafay, introduction by H. H. King.—p. 1083.
Studies on Cholera Bacteriophage: Part I. General Technic. I. N. Asheshov, Inna Asheshov, S. Khan and M. N. Lahiri.—p. 1101.
Id.: Part II. Classification of Bacteriophage and Its Practical Application. I. N. Asheshov, Inna Asheshov, S. Khan, M. N. Lahiri and S. K. Chatterji.—p. 1127.
Id.: Part III. Virulence and Development of Bacteriophage. I. N. Asheshov, Inna Asheshov, M. N. Lahiri and S. K. Chatterji.—p. 1159.
Biologic Assay of Digitalis Preparations in the Tropics. R. N. Chopra and J. S. Chowhan.—p. 1189.
Complement-Fixation in Filariasis. R. B. Lloyd and S. N. Chandra.—p. 1197.
Types of Tubercle Bacilli Causing Extrapulmonary Lesions in India. A. C. Ukil.—p. 1209.

Cholesterosis of Gallbladder in Indians.—Ghose, in his clinical studies and experiments on rabbits, observed that cholesterosis of the gallbladder is found in about one fourth of the total number of gallbladder diseases. It gives rise to clinical symptoms that can be eliminated only by the removal of the diseased organ. He describes the morbid anatomy and the histology of the condition. The presence of lipid in the various coats of the gallbladder was demonstrated by lipid stains. Inflammatory changes were present in most of the cases. There

was a definite rise in the cholesterol content of the blood, bile and gallbladder; therefore a blood cholesterol estimation, as a routine method prior to the operation, is of some diagnostic importance. Hypercholesteremia, produced by prolonged feeding of rabbits with pure cholesterol and by intraperitoneal injections of cholesterol, is capable of giving rise to the condition of cholesterosis of the gallbladder. Inflammation of the gallbladder, when associated with a hypercholesteremic condition, seems to hasten the disease. Cholesterosis of the gallbladder could not be produced by the infection of the gallbladder alone; i. e., without being associated with hypercholesteremia.

The Rose Bengal Test.—Rao studied the value of the rose bengal test in the diagnosis of cirrhosis of the liver and in determining its utility in the differentiation of ascites due to cirrhosis of the liver from other conditions resulting in ascites; e. g., cardiac decompensation, kidney inefficiency, chronic peritonitis, tuberculous peritonitis or malignant peritonitis. He used the modified technic described by Delprat and Stowe. He observed that the dye is entirely nontoxic to the human tissues, and no untoward symptoms were seen in any of the cases after intravenous injection of the dye in doses of 100 mg. for the adult. Marked retention of the dye was found in cases of cirrhosis and malignant disease of the liver. In cases of malignant metastatic disorders of the liver, the excretion of the dye depends on the amount of functionally active liver tissue still remaining. Marked retention of the dye without bilirubinemia constitutes an important observation in cases of decompensated portal cirrhosis of the liver. The author discusses the causes of this marked retention of the dye in portal cirrhosis and shows that the secondary anemia, which is seen in the later stages of the disease, cannot account for this marked retention. Jaundice associated with toxemias of the liver always produced retention of the dye. Slight retention of the dye was seen in long standing cases of passive congestion of the liver resulting from cardiac decompensation and in cases of ancylostomiasis in which the secondary anemia had persisted for a long time. The test is a valuable aid in differentiating ascites due to cirrhosis of the liver from other conditions producing ascites; e. g., cardiac decompensation, nephritis or peritonitis—simple, tuberculous or malignant. The results obtained in this investigation are in agreement with those obtained by the originators of the test. The test is more likely to be positive in those conditions in which there is diffuse destruction of the hepatic parenchyma than in those with localized disturbances. The test does not show any specific type of damage to the liver but only denotes the amount of functionally active liver tissue still present. The author points out that, while the retention of the dye is of great significance in the diagnosis of cirrhosis of the liver, its value in the prognosis is limited. He suggests that no useful purpose is served in calculating the "total function" of the liver from the percentage of dye present in the blood at the end of eight minutes. Taken in conjunction with the clinical observations and the results of other tests, the rose bengal test constitutes a valuable aid in the study of hepatic diseases.

Complement Fixation in Variola.—Venkataraman tested, against an antigen of calf lymph, the serums from twenty patients with smallpox, from two healthy adults who had had smallpox in childhood, from eight patients with chickenpox and from six Wassermann positive patients for the presence of specific complement fixation antibodies. He employed the usual modified Wassermann technic, except that he used a calf lymph which was a 1:5 glycerin dilution of the virus material diluted in 40 volumes of physiologic solution of sodium chloride at the time of the test and in which the coarser particles were allowed to settle down. All the serums used in the test were previously inactivated in a water bath at 56 C. for half an hour. They were used in dilutions ranging from 1:5 to 1:40, and the serum control in a dilution of 1:5. Pooled guinea-pig serum that had been left in contact with the clot over night was used as complement. This was titrated against 3 per cent sheep cells sensitized previously with 5 minimal hemolytic doses of amboceptor. Three minimal hemolytic doses of complement was used in the tests throughout. The unit of volume adopted was 0.1 cc. One volume each of the serum dilution, antigen and complement were mixed and allowed to fix for from twenty to twenty-two hours in a refrigerator (temperature from 6 C. to 8 C.). Then one volume of sensitized cells was added and

the tubes were incubated in a water bath at 37 C. for half an hour. The readings were taken immediately. Specific complement fixation antibodies were regularly present in the cases of smallpox and were satisfactorily demonstrated by using the calf lymph antigen.

Journal of Neurology and Psychopathology, London

13: 289-384 (April) 1933

Form of Progressive Cerebral Sclerosis in Infants Associated with Primary Degeneration of Interfascicular Glia. J. G. Greenfield.—p. 289.

Size in Mental Deficiency. W. R. Ashby and R. M. Stewart.—p. 303.

*Mental Symptoms Associated with Fifty-Eight Cases of Cerebral Tumor. L. Minski.—p. 330.

Mental Symptoms Associated with Cerebral Tumor.

Minski studied the mental symptoms in fifty-eight cases of cerebral tumor and made an attempt to assess their value, if any, in the localization of the tumors. Concurrently with these symptoms, the presence or absence of physical signs was noted with a view to helping in localization. He concludes that mental symptoms in cerebral tumor do not appear to depend on localization but rather on the rate of growth of the tumor and the previous personality of the patient. Mental symptoms occur more commonly with cerebral tumors (more with left-sided than right-sided ones), as, of the fifty-eight examined, forty-nine were cerebral and only five subtentorial. All the former and only one of the latter showed mental symptoms. In slow growing tumors personality changes predominate, the mood depending on the release of preformed tendencies. In this series, fourteen of the fifty-eight patients examined were depressive and seven manic. In rapidly growing tumors, changes in the intellectual sphere are marked and personality changes slight, while in the more rapidly growing tumors intellectual disturbances with clouded consciousness are found. In the former group were twenty-three, and in the latter six. Twenty-five patients showed reactions simulating functional psychoses, and in twelve of these physical signs were absent. Physical signs are less common in patients admitted to a hospital caring for the mentally deranged patient than in patients admitted to a neurologic hospital, while aphasia is commoner in patients seen in the former.

Journal Obst. and Gynec. of Brit. Empire, Manchester

40: 397-540 (May) 1933

Physiology and Pathology of Isthmus Uteri. O. Frankl.—p. 397.

Uterine Inertia. A. Bourne and A. C. Bell.—p. 423.

*Histologic Classification of Cancers of Uterine Cervix, and Relation Between Cellular Structure and Prognosis After Radium Treatment. R. G. Maliphant.—p. 444.

Some Aspects of Cervical Pathology. G. I. Strachan.—p. 460.

Study of Ureteral Tone During Pregnancy. D. Baird.—p. 472.

Innervation of Uterus. A. A. Davis.—p. 481.

Endocrine Factors Controlling Functional Activity of Uterus. J. M. Robson.—p. 498.

Analysis of Nine Hundred and Thirty-Seven Cases of Postmenopausal Hemorrhage. E. C. Fahmy.—p. 506.

Fundal Rupture of Pregnant Uterus. H. Lloyd and P. J. Ganner.—p. 513.

Normal Labor and Its Anomalies: The Dividing Line. W. Taylor.—p. 516.

*Hydramnios. L. C. Rivett.—p. 522.

Obstetric Significance of Transverse Contraction of Pelvis. A. H. M. J. Van Rooy.—p. 526.

Cancers of Uterine Cervix.—Maliphant studied the relation between cellular structure and response to radium treatment in a series of 236 cases of cancer of the uterine cervix. The growths were divided histologically into solid and glandular forms, and a subdivision of the former into three groups according to the predominant type of cancer cell. Of the growths 4.2 per cent were adenocarcinomas, and of the remainder 30.9 per cent were spindle cell cancers, 55.8 per cent were transitional cell cancers, and 13.3 per cent were spindle cell cancers. Only 21 per cent of the growths were pure, and in the remainder the grouping was based on the predominant type of cell present. The best immediate response to treatment was seen in the spindle cell cancers. The results of the author's investigation support to some extent the biologic relation between anaplasia and radiosensitivity. Though the spindle cell cancers showed the better immediate results, the cellular type of the growth seemed to make but little difference so far as the results were concerned. In this respect his observations agree with those of Kimbrough and Norris. This may be accounted for by a balancing of the two factors of the malignancy.

nant condition and radiosensitivity in the four histologic groups. The results obtained in the group of adenocarcinomas were a little better than they were in the epidermoid cancers. The results in the solid carcinomas improved slightly with the degree of anaplasia of the tumor.

Hydramnios.—Rivett presents ten cases, four of which demonstrate that tapping the uterus is a rational method of treating hydramnios, since all four were sufficiently acute to demand intervention, and any other line of treatment would have resulted in a premature and barely viable child. There do not appear to be any risks, other than the patient going into labor. In one case the author apparently struck the placenta, as even when the cannula was pushed in up to the hilt only blood was withdrawn. Several times he has noticed violent fetal movements during the course of the operation, suggesting that the fetus has come up against the sharp end of the cannula. When withdrawing more than two pints of amniotic fluid it is usually necessary to reinsert the needle as, with the lessening of the contents of the uterus, the needle leans at an acute angle to the skin. Even in acute hydramnios, as in one of his cases, the amniotic fluid does not appear to be under pressure. It has to be sucked out with an aspirating syringe.

Journal of State Medicine, London

41:249-310 (May) 1933

Rheumatism and Arthritis as a Public Health Problem. W. L. Brown.—p. 249.

Social and Industrial Aspects of Rheumatism. R. F. Fox.—p. 263.

Economics of Rheumatism. C. W. Buckley.—p. 282.

Rheumatism as Factor in Employment. J. Boyd.—p. 295.

Quantitative Modification of Bendien Reaction in Serodiagnosis of Malignancy. E. C. Lowe.—p. 301.

Journal of Tropical Medicine and Hygiene, London

36:141-156 (May 15) 1933

Notes on Bacterial Pseudomycoses. A. Castellani.—p. 141.

Coccidiosis of Hare. A. Robertson.—p. 143.

Lancet, London

1:943-998 (May 6) 1933

*Pain. D. Waterston.—p. 943.

*Aural Vertigo: Treatment by Division of Eighth Nerve. H. Cairns and W. R. Brain.—p. 946.

Study of Reserves of Vitamin A in Livers of Native Mine Laborers, with Especial Reference to Their Resistance to Pneumonia. F. W. Fox.—p. 953.

Glandular Fever in the Tropics. E. Cochrane and S. C. Bettencourt-Gomes.—p. 955.

Tests for Respiratory Efficiency: So-Called Dead Space. A. Moncrieff.—p. 956.

Pain.—Waterston presents the sensory response to a needle prick of the skin, arteries, veins, muscles, fibrous tissues, periosteum and bone. The walls of veins are much less sensitive to mechanical stimulation, and the pain apparatus in them is evidently much slighter than that of arteries. Muscles form an interesting comparison with these other tissues, for while there is no doubt that muscles have a pain apparatus, it is usually excited by a special form of stimulus, i. e., spasmodic contraction as in cramp, or by contraction with impaired blood supply. Pain is usually regarded as a protective mechanism and as being primitive in character, but it is a more highly specialized sense than would at first appear. Under the tactile epithelium of the body surface is a layer of tissue, the corium, furnished with nerves responsive to a wide range of stimuli—in other words, protective against many injurious agencies. The tissues lying deeper still have also a pain apparatus, which, in the case of arteries, responds to mechanical injury but in muscle is responsive rather to harmful conditions originating in the muscle than to mechanical injury. Pain is not a sensation produced by nerves of other forms of sensation but has its own apparatus, its own nerves, and probably its own receptors.

Aural Vertigo.—Cairns and Brain report four cases of severe aural vertigo treated by division of the auditory nerve after other methods had failed. In each instance the patient had been getting deaf in one ear for some time before the attacks began. The attacks consisted of vertigo of sudden onset; three of the patients fell without warning, and the fourth had a feeling that he was falling. In addition, external objects appeared to rotate and this symptom was so aggravated by movement that the patients had to keep quite still,

usually in the recumbent position. Milder attacks, unaccompanied by falling, occurred in all cases and were often brought on by sudden movement of the head. The severe attacks recurred at varying intervals, and, in addition, the patients sooner or later began to have a constant feeling of unsteadiness and a tendency to deviate to one side when walking. Tinnitus occurred if it had not already been present before the onset of the attacks. Phenobarbital and other sedatives were taken by all with little or no improvement, and one patient had had the middle ear operated on without obtaining relief. Examination revealed no gross physical signs apart from a disturbance of hearing and of labyrinthine function. All patients showed severe deafness of one ear, while the hearing of the other ear was moderately affected or was normal. These patients appeared to be suitable subjects for division of the auditory nerve on the side on which hearing was affected. The operative technic was that introduced by Dandy, with minor variations in all cases. Following the operation, all four patients have been relieved of their vertigo and enabled to return to work. The authors discuss the physiologic results of the operation, which include transitory diplopia.

1:999-1052 (May 13) 1933

Human and Comparative Placentation, Including Early Stages of Human Development. O. Grosser.—p. 999.

Epilepsy and Conditions with Similar Symptoms, with Observations on Hypnotic, Epileptic, Traumatic and Hysterical Dissociation. Hildred Carill.—p. 1001.

Diverticula of Thoracic Esophagus: Report of Case in Which the Diverticulum Was Successfully Resected. N. R. Barrett.—p. 1009.

Diverticula of Pharynx and Esophagus: Correlation of Pathologic and Radiologic Appearances. R. W. Raven.—p. 1011.

*Elementary Bodies of Varicella and Their Agglutination in Pure Suspension by Serum of Chickenpox Patients. C. R. Amies.—p. 1015.

Elementary Bodies of Varicella.—Amies confirms the investigations of Aragão and Paschen and gives a method of preparing purified suspensions of varicella elementary bodies, in which the varicella vesicle fluid is harvested directly into a small volume (0.5 cc.) of physiologic solution of sodium chloride containing 2 per cent of sodium citrate. This is contained in a sealed 1 cc. ampule, which can be opened at the bedside and sealed in a gas flame before returning to the laboratory. A fine capillary pipet fitted with a rubber teat is used to puncture the vesicle and to transfer the fluid to the diluent. If the fluid on aspiration is found to be cloudy from the presence of inflammatory cells it should be discarded, as the elementary body content is low, while the disintegrating cells considerably increase the work of obtaining a pure suspension. The contents of twenty vesicles will yield sufficient pure suspension for five or six agglutination tests. The citrate-saline suspension is first centrifugated at a relatively slow speed (from 1,500 to 2,000 revolutions per minute) for ten minutes in order to throw down any gross debris, cells, and so on. The supernatant fluid is then transferred to tubes of about 5 mm. internal diameter, with a constriction at the top end to enable them to be plugged with absorbent cotton, and is centrifugated at a speed of from 10,000 to 12,000 revolutions per minute for thirty minutes. The supernatant fluid is removed, and the deposit containing the elementary bodies is resuspended in physiologic solution of sodium chloride containing 0.25 per cent of formaldehyde. After a further short period of centrifugation to deposit any debris that may still be present, the suspension is ready for use. The actual test is carried out by mixing equal volumes of the antigen and an appropriate dilution of the serum that is to be examined. The mixture of antigen and serum is mounted as a hanging drop preparation. The preparations are kept at room temperature and are examined under the microscope after twenty-four and forty-eight hours, by means of a two-thirds inch objective and a No. 10 ocular. A positive reaction is recognized by the appearance of small, highly refractile clumps, like those produced in the vaccinia agglutination reaction. Repeated tests have shown that normal serums from man, monkey or rabbit do not agglutinate these suspensions. Antiserum, obtained from animals hyperimmunized against vaccinia and known to contain antivaccinal agglutinins to a high titer, has also consistently failed to agglutinate these suspensions of varicella bodies. The author carried out the agglutination test on sixty serums obtained from fifty-five different patients during and after recovery from a typical attack of varicella. The data show that agglutinins appear in the blood about five days after the onset of the erup-

tion and persist for some time. In a few cases the agglutination reaction has failed to detect the presence of circulating antibodies even when a number of tests were made at different times during the convalescent period. This failure to show a reaction is quite in accordance with what is already known regarding the protective power of convalescent serum in virus infections, as in poliomyelitis and measles.

Medical Journal of Australia, Sydney

1: 573-602 (May 13) 1933

Treatment of Joint Lesions of Arthritis Deformans. H. Pern.—p. 573.
Investigation of Toxicity and Sterility of Commercial Preparation Containing Modified Snake Venom. C. H. Kellaway and F. Eleanor Williams.—p. 581.

*Surgical Treatment of Disseminated Sclerosis. N. D. Royle.—p. 586.
Some Anatomic Facts Influencing Obstetric Practice. E. B. Heffernan.—p. 588.

Disseminated Sclerosis.—Royle subjected four patients to the division of the thoracic sympathetic trunk between the first and second thoracic ganglions for disseminated sclerosis so that the cerebral circulation would be improved. The results of treatment by altering the cerebral circulation are striking, progressive and lasting. It is nearly eighteen months since the first patient was subjected to operation. It is well known that disseminated sclerosis is characterized by remissions, but it is hardly likely that remissions should immediately follow operation in four consecutive cases without having some relationship to the measures adopted. The direct concomitant of these remissions is an improvement in cerebral circulation, and, in the author's opinion, venous congestion as an antecedent to sclerosis is a factor in causing the symptoms of this disease. It is obvious that the earlier in the course of the disease the patients are subjected to treatment, the more hope there will be for complete recovery. The hyperactivity of the vasomotor center, as a result of cerebral venous congestion, must not be forgotten as a factor leading to bulbar and spinal vasoconstriction and, thus, to altered reflex activity. It is possible that the delay in relaxation and absence of oscillations in the knee jerk are signs of increased tone due indirectly to hyperactivity of the vasomotor center. Because of the contralateral fall in blood pressure and amelioration in the disordered function of abdominal organs following operation on the thoracic sympathetic trunk, it is highly probable that sympatheticonus will be a term equivalent to activity of the vasomotor center.

Gynécologie et Obstétrique, Paris

27: 481-571 (June) 1933

Pulmonary Ventilation in Pregnant Women. Le Lorier, R. Giffon and R. Parent.—p. 481.

Anatomy and Pathogenesis of Ovarian Hemorrhages. L. Cornil, M. Mosinger and Picaud.—p. 491.

*Treatment of Puerperal Infection by Vaccination in Situ into Uterine Parenchyma. F. Spirito.—p. 509.

Phases of Physiologic Sterility in Women. E. Macias de Torres.—p. 513.

Anatomopathology of Torsion of Uterine Tubes. J. Regad.—p. 519.

Cysts of Pavilion of Oviduct. G. Jeanneney and S. Magnant.—p. 536.

*Vaginal Evisceration of Loop of Small Intestine Fourteen Years After Vaginal Hysterectomy for Prolapse. G. Rieucau.—p. 540.

Treatment of Puerperal Infection.—For three years Spirito has treated puerperal infection by local vaccination of the uterine parenchyma without observing a single fatality. The vaccine is composed of 1 billion streptococci, 500 thousand staphylococci, 500 thousand gonococci and 300 thousand colon bacilli per cubic centimeter. The streptococci are obtained by hemoculture from patients who have not yet undergone treatment; the other bacteria composing the mixed vaccine are obtained in large part from the vaginal secretion of the patient being treated. With a fine long needle on a Pravaz syringe, 0.25 cc. of the vaccine is injected into the parenchyma of the uterus. The puerperal uterus being soft, it is not necessary to hold it in place by a clamp or to exteriorize it. The injection is usually followed by an elevation of temperature to 39.5 or 40 C. (103 or 104 F.) proportionate to the degree of the infection and the quantity of vaccine injected. The reaction decreases with each injection and ceases when cure is complete. The dosage for the second and following injections depends on the reaction to the previous injection; it may remain the same or be increased if the first elevation of temperature did not exceed 38 or 38.5 C. (100.4 or 101.3 F.). Injections should be given every three days until the customary dose no longer gives a reaction and one or two should be given thereafter. The injections

should be resorted to at the first symptoms, but excellent results have also been obtained in advanced cases. The author thinks that this method of vaccination produces a direct local action on the focus of infection as well as the general immunologic action obtained by other forms of vaccination, and that this is probably responsible for the excellent results.

Presse Médicale, Paris

41: 1137-1160 (July 19) 1933

Effects of Resection of Superior Cervical Sympathetic Ganglion on Parathyroids in Dogs. R. Leriche, A. Jung and E. Woringier.—p. 1137.

Tonsillectomy by Taptas' Method. G. Departout.—p. 1139.

*Amino-Acids in Treatment of Hay Fever. J. Lenormand.—p. 1141.

Amino-Acids in Treatment of Hay Fever.—Lenormand treated twenty-nine hay fever patients with a solution of 2 per cent tryptophan and 4 per cent histidine, administered in daily subcutaneous injections of from 0.2 to 0.4 cc. The injections were made during the pollen season. In fourteen patients the symptoms disappeared completely within a brief time, in eight they were greatly attenuated and in five they were diminished sufficiently to be readily endurable. While the daily injections were given, some of the patients were able to be in the places most favorable to the production of their hay fever without a recurrence of symptoms. This treatment, however, is merely palliative and its effects are felt only during the period of treatment. The action of the amino-acids in the treatment of hay fever as in the treatment of gastric and duodenal pain probably consists in stimulating a hypersecretion of mucus, which protects the hypersensitive mucous membrane concerned (nasal or gastro-intestinal) against irritating substances.

Riforma Medica, Naples

49: 589-624 (April 22) 1933

Origin and Significance of Bilirubin in Cerebrospinal Fluid. S. Maugeri.—p. 591.

*New Prophylactic Method Against Intolerance to Arsphenamines. U. Rebaudi.—p. 593.

Multiple Angiomas of Bladder and Kidney. G. Cirio.—p. 598.

Modern Treatment of Acute Anterior Poliomyelitis. M. Raspi.—p. 615.

Prophylaxis Against Intolerance to Arsphenamines.—

Rebaudi tried on men and rabbits intravenous injections of a non-aqueous solution of 0.9 Gm. of neoarsphenamine in from 1 to 2 cc. of amino-acid of the liver, stirred with a glass rod until the color was yellow gold. He administered slowly 0.15 Gm. of the solution per kilogram of body weight to rabbits and minimum doses of from 0.3 to 0.45 Gm. of the solution to men on alternating days until reaching 0.9 Gm. and in some cases a maximum of 1.2 Gm. In all cases the injection proved innocuous. He demonstrated that patients presenting incoercible symptoms of intolerance to arsphenamine responded favorably to this prophylactic method. The author experimented with the amino-acids of the brain and spinal cord, which showed similar action but had a less detoxicating effect than the amino-acids of the liver. He recommends this method to permit the administration of stronger and more frequent doses of neoarsphenamine.

49: 895-934 (June 17) 1933

Pathogenic Activity of Enterococcus: Enterococcic Pneumonitis. L. d'Antona.—p. 897.

*Less Common Forms of Acute Anterior Poliomyelitis. A. Gentili.—p. 900.

Mechanism of Visceral Abdominal Pain Studied in Operative Acute Appendicitis, Especially in Ectopic Seat. A. Ciminata.—p. 904.

Alcohol Treatment of Pulmonary Suppurations. F. Serio.—p. 925.

Acute Anterior Poliomyelitis.—Gentili, within a period of fourteen months, observed six cases of paralysis of the facial nerve and one case of paralysis of the sixth cranial nerve. In all cases the paralytic manifestations were preceded either by a febrile period of from three to four days or by indications of a slight involvement of the spinal cord. Many cases of paralysis of the facial nerve are produced by the action of a neurotropic virus, probably the poliomyelitis virus, affecting the protuberant nucleus of the facial nerve. According to Wickham, Schreiber and others, many cases described as acute meningitis with paralysis are really acute anterior poliomyelitis with meningitic beginning. The author describes a case of acute anterior poliomyelitis with a symptomatology so purely meningitic that it had been diagnosed at first as tuberculous meningitis. Only later did the patient evince slightly paretic signs in the

lower limbs, preceded by sharp pains. These were probably due to a participation of the pathologic process of the posterior spinal roots with lesions of the cells of the anterior gray horn. Consequently it was called a meningocelluloradiculitis. Etiologically this case was attributed to a poliomyelitic infection because of its clinical characteristics and its course, and because, at the same time, typical cases of acute anterior poliomyelitis were found in the immediate neighborhood.

Semana Médica, Buenos Aires

40: 2089-2160 (June 29) 1933. Partial Index

- Synchronized Technic in Surgery of Appendicular Abscess and of Appendicular Localized Peritonitis. G. Bosch Arana.—p. 2089.
Rupture of Chorion During Pregnancy: Intra-Amniotic, Extrachorial Pregnancy: Two Cases. E. A. Boero, V. López Zavaleta and J. L. Costa.—p. 2108.
Gastrotonometric Curve of Normal Stomach. T. Martini and R. E. Curutchet.—p. 2111.
Roentgen Examination of Digestive Tract. E. A. Lombardi and L. L. Bernardo.—p. 2116.
Velez's Sign of Inversion of Leukocytes in Pulmonary Tuberculosis. C. Floriani.—p. 2119.
Extragenital Syphilitic Chancre Without Venereal Contact: Case. C. Orol Arias and M. A. Mazzini.—p. 2124.
*Primary Echinococcosis of the Vertebrae: Two Cases. J. E. Pessano.—p. 2126.

Primary Echinococcosis of Spine.—Pessano states that trauma seems to be concerned in the etiology of primary vertebral echinococcosis. The disease develops after a long period of latency, which makes its early diagnosis difficult. The earlier the diagnosis is made, the greater the probabilities of obtaining a cure through surgery, which is the only recourse. Arsenical compounds are found to have a favorable influence as coadjuvants of the surgical treatment. It is advisable to aim at total evacuation of the cysts, but, if this cannot be done, as much of the hydatid material as possible should be removed. The operation brings about a prolonged improvement in the condition of the patient and prevents the development of secondary echinococcosis. Primary osseous echinococcus cysts are always multilocular and are located in either the spongy or the areolar tissues of the vertebrae. The cysts cause compression of the spinal cord and the outcome is usually fatal. Two cases are reported.

Siglo Médico, Madrid

92: 1-24 (July 1) 1933. Partial Index

- *Medical Treatment of Tuberculosis of the Genital Organs in Women. L. Soler y Soto.—p. 1.
Modern Concepts on Etiology of Gangrene of the Lung: Three Cases. F. Peco.—p. 8.

Tuberculosis of Genital Organs.—Soler y Soto states that the medical treatment is not mutilating and gives satisfactory results when resorted to during the early periods of the disease. In all cases it should be associated with a general hygienic and dietetic treatment. The roentgen treatment, because of its property of destroying the pathologic tissues without injuring normal cells, is of great therapeutic value. The objections to this treatment are the production of amenorrhea and the possibility of abnormalities in the offspring of irradiated women. Amenorrhea in these cases constitutes a means of defense of the organism against the infection. With regard to the second objection, pregnancy in these women is a rare event and the fear does not seem justified in view of the fact that Walter Schemit reported 163 pregnancies after roentgen treatments with normal children and that the author knows of a similar case. Heliotherapy, ultraviolet irradiations and diathermy, either by themselves or as coadjuvant to some other forms of medical treatment, also give satisfactory results. Finikoff reports satisfactory results from a combined treatment with calcium and iodine. It consists in intramuscular injections of from 5 to 15 cc. of an oil prepared with 1 cc. of a 10 per cent solution of iodine added to 10 cc. of sterilized neutral peanut oil. The injections are given at intervals of five or eight days and are associated with calcium therapy. Finikoff prefers inorganic calcium salts and gives them orally and, exceptionally, intravenously. The diet is the one given to patients with acid cholangitis. The treatment has been used in all forms of tuberculous diseases except in intestinal, laryngeal and pulmonary tuberculosis, and, in 245 cases of tuberculosis of the female genital organs, has resulted in 181 clinical recoveries, 46 improvements and 19 failures.

Archiv für Verdauungs-Krankheiten, Berlin

54: 1-128 (July) 1933

- Point of Attack of Histamine and of Secretin-Like Acting Substances in Certain Foods on Secretory Apparatus of Glands of Fundus of Stomach. A. Bickel and I. Kanai.—p. 1.
*Should Histamine Test Be Employed in Diagnosis of Anacidities? G. Szemző.—p. 16.
Unusual Aspects of Diabetes in Jews. H. Strauss.—p. 34.
Thiocyanic Acid in Gastric Juice. H. R. Kanitz.—p. 42.
Limits of Agreeableness of Some Foods in Adults Without Gastro-Intestinal Disturbances. H. Winkler.—p. 52.
Pathogenesis of Acute Necrosis of Pancreas. E. Neter.—p. 62.
Connection Between Cholelithiasis and Cancer of Gallbladder. J. Seide and W. Geller.—p. 71.
Influence of Gastric Secretion on Speed of Blood Current, Utilization of Oxygen, and Sugar and Chloride Content in Arterial and Venous Blood. D. F. Okunew and M. S. Ssolnzewa-Rjasanowa.—p. 78.

Histamine Test in Diagnosis of Anacidities.—Szemző reports a case in which, following a diagnostic histamine injection, a severe collapse developed. He states that the outcome of the histamine test has no significance for the differential diagnosis of disturbances that are accompanied or caused by an acidity. The histamine test gives no information about the type, the severity and the restitutional capacity of the changes in the gastric mucous membrane and it gives no directions for the treatment. The stimulating action of histamine on the secretory function can be replaced by insulin and perhaps also by other substances that act on the stomach directly rather than by way of the blood stream. The author suggests the patient's favorite food and various test breakfasts. He thinks that the latter methods will be preferable for the examination of the gastric function, particularly if the test is made by the practitioner outside the hospital. He points out that his report is not intended to dispute the therapeutic use of histamine but only its diagnostic use.

Beiträge zur klinischen Chirurgie, Berlin

158: 1-112 (July 12) 1933

- *Experimental Studies on High Intestinal Obstruction: Question of Absorption. P. Seulberger, K. Brandes and W. Roth.—p. 1.
Healing in Osteochondritis Dissecans in Experimental and Clinical Investigations. H. Tammann.—p. 39.
Multiple Tumors of Cartilaginous Tissue of Skeleton with Local Sarcomatous Transformation. T. Canigiani.—p. 49.
*Mediastinal Emphysema. W. Dick.—p. 59.
Calcification of Cartilaginous Disks of Knee Joint. R. Andreesen.—p. 75.
Rôle of Surgery in Training of Physician. K. H. Bauer.—p. 83.

High Intestinal Obstruction.—Seulberger and his associates conclude from their experimental studies that absorption of both organic and inorganic substances takes place in an occluded intestine. The practical suggestion to be derived is the desirability of emptying the occluded loops. The results obtained with an ileostomy tend to support the theoretical premises. The injunction of Lâwen not to empty the occluded contents by way of the normal intestine below was based on a supposition that there was an increased rate of absorption in the normal intestine below the occlusion and that this rapid absorption was the cause of sinking of the blood pressure. The authors state that their experiments clearly demonstrate that there is no increase in the rate of absorption from the intestine below the obstruction and that the fall of blood pressure is the result of irritation of the vagus. The authors, in agreement with other investigators, find that the rate of absorption in ileus is slower than in the normal state. They claim they are the first to prove that the vital activity of the wall of the intestine is impaired in ileus. They have reference particularly to the pumping or sucking action of the intestinal villi. They have demonstrated that this function becomes arrested as a result of the mildest disturbance in the blood supply to the intestine and that a definite, mildly alkaline reaction is necessary to maintain the function. They have further demonstrated that the contents of an occluded intestine are hypertonic and of a greater alkalinity than the normal contents. The longer the duration of the obstruction, the less does the wall of the intestine remain as a living membrane with a regulated permeability. The authors point out that there are factors other than the wall of the intestine which impede absorption. They studied liver function in ileus and found that elimination by it of inorganic poisons is slower when there is obstruction of the intestine and that the detoxifying effect on strychnine and tribrom-ethanol is much affected.

Mediastinal Emphysema.—Dick reports two instances of mediastinal emphysema treated in Schloffer's clinic. He states that, while the diagnosis may at times be obscure, sudden development of subcutaneous emphysema over the throat, spreading over the neck and the chest, is pathognomonic. The pathogenesis was elucidated by Jehn and Nissen in their experimental studies. According to them, the condition is the result of the compression of the extrapericardial portions of the pulmonary tissue and of the venae cavae, and not of the trachea. Nägeli, utilizing an opaque medium, demonstrated roentgenoscopically the arrest of the blood stream in the venae cavae. From the standpoint of treatment there are two indications: (1) to relieve the pressure on the venae cavae, (2) to close the opening in the bronchus or the pulmonary tissue. The first is of life-saving importance, the second is only relative. The measures that have for their primary aim the relief of pressure are: (1) punctures of the throat or the mediastinum; (2) incisions with (a) division of the skin and the platysma, (b) opening up of the middle fascial compartment of the neck, (c) opening into the mediastinum; (3) wide opening of the mediastinum through division of the sternum or through a parasternal mediastinotomy. The author prefers jugular incisions as less shocking and quite as efficient. The incision of the middle cervical fascia opens up the middle compartment of the neck, which is in direct communication with the mediastinum. A still more efficient method of releasing the air is to open the mediastinum through the same incision.

Dermatologische Wochenschrift, Leipzig

97: 1055-1098 (July 15) 1933

- Schizosaccharomyces Hominis Benedek. O. Backofen.—p. 1055.
Tubercle Bacillæmia in Cutaneous Tuberculosis. L. Bernhardt.—p. 1056.
*Identity of Adenoma Sebaceum, Neurofibromatosis and Subungual Fibromatosis. I. Enokow.—p. 1061.
Use of Filiform Douche in Dermatology and Advantages of New Apparatus. M. Monacelli.—p. 1064.
Criticism of Dermatologic Therapy: Acne Vulgaris and Roentgen Irradiation. M. K. Polano.—p. 1070.
Ultraviolet Therapy of Leukorrhea. O. Berger.—p. 1072.

Adenoma Sebaceum, Neurofibromatosis and Subungual Fibromatosis.—On the basis of an analysis of reports in the literature and of observations on a woman in whom adenoma sebaceum, neurofibromatosis and subungual fibromatosis concurred, Enokow reaches the following conclusions: 1. Adenoma sebaceum is one of the manifestations of neurofibromatosis. This is proved by the frequent concurrence of these two dermatoses, by their common origin and by the similarity in their clinical and histologic aspects. 2. Subungual fibromatosis supplements the generalized disturbances of neurofibromatosis and of adenoma sebaceum: it has the same pathogenesis and consequently should not be considered as a separate nosologic entity.

Deutsche medizinische Wochenschrift, Leipzig

59: 989-1028 (June 30) 1933

- Circulation and Nervous System. F. Kauffmann.—p. 989.
Syringomyelia. F. Schultze.—p. 992.
*Danger of Intra-Uterine Foreign Bodies. G. Glaser.—p. 994.
Indications for Anesthesia by Means of a Sodium Salt of a Barbituric Acid Derivative. E. Kobel.—p. 996.
Mud Packs in Treatment of Rheumatic Disturbances. Genner and Hasenbach.—p. 999.
Blood Picture and Oxygen Deficiency. E. Jold.—p. 1001.
What Knowledge Should Practitioner Have About Diagnosis and Treatment of Mental Disturbances? Nobbe.—p. 1004.

Danger of Intra-Uterine Foreign Bodies.—Glaser calls attention to the complications that may be produced by the intra-uterine use of pessaries, laminaria tents, bougies, ballons and abortifacient ointments. He reports the histories of three women in whom the introduction of an intra-uterine pessary to prevent pregnancy led to extensive parametric infiltrations and exudates, to tumors of the adnexa or to severe peritonitis. In the case of intra-uterine injection of abortifacient ointments the dangers are still greater, for chemical action is added to the mechanical damage and to the danger of infection. The author observed three cases in which the use of such ointments led to severe complications with a fatal outcome in one. He emphasizes that intra-uterine pessaries and abortifacient ointments are quack methods and should disappear from the therapeutic armamentarium of the physician.

Klinische Wochenschrift, Berlin

12: 1009-1040 (June 30) 1933

- Local Diagnosis of Mental Disturbances. E. Küppers.—p. 1009.
Test of Potency of Digitalis Preparations on Human Beings. E. Edens.—p. 1012.
*Intestinal Wall as Site of Formation of Choline and Its Significance for Peristalsis. G. Kahlson.—p. 1015.
*Circulatory Action of Epinephrine in Healthy Human Beings. H. Schulten, G. Budelmann and H. Lippelt.—p. 1017.
Chronaximetric Investigations in Tetany. H. Reiners.—p. 1018.
Calcium Content of Guinea-Pigs After Administration of Small Quantities of Parathyroid Hormone. B. N. E. Cohn and R. Stöhr.—p. 1021.
Applicability of Acetylene Method for Determination of Heart Minute Volume in Pregnancy. A. Anthony and R. Hansen.—p. 1022.
High Incidence of E. Dysentery (Kruse-Sonne Dysentery) in Schleswig-Holstein During 1932. F. Weigmann.—p. 1024.
Quantitative Determination of Indican in Blood Serum. J. Broekmeyer.—p. 1025.

Intestinal Wall as Site of Formation of Choline.—Kahlson shows that the intestinal wall is capable of separating from lecithin large amounts of choline. The entire small intestine has the capacity of forming in about twelve hours the amount of choline present in the entire body. The uterus is likewise capable of producing considerable amounts of choline, whereas the skeletal muscles produce larger amounts only after considerable tetanization. About the production of the peristaltic wave, it is assumed that a certain amount of choline is a physiologic necessity for the response of the intestine to filling, and to dilatation. The dilatation stimulus is the immediate factor that elicits peristalsis, but this stimulus can be furthered by superposed chemical "auxiliary stimuli." Acetylcholine fulfils all pharmacologic requirements to serve as such an auxiliary stimulus.

Circulatory Action of Epinephrine.—Schulten and his associates observed that in healthy persons the injection of epinephrine produces, in addition to the well known increase in arterial pressure, pulse frequency and venous pressure, a temporary reduction in the vital capacity of the lung. It is assumed that this indicates a temporary oversupply of blood in the lung, resulting from the disproportion of the functional activity of the right and left heart.

Medizinische Klinik, Berlin

29: 933-964 (July 7) 1933

- Apoplectic Cerebral Hemorrhages. L. Aschoff.—p. 933.
Chemical Investigations and New Theories About Immunity. F. Haurowitz.—p. 936.
Epidemiologic, Clinical and Histopathologic Experiences During Poliomyelitis Epidemic in Silesia in 1932. L. Guttman.—p. 939.
*Modification of Gastric Secretion by Combination of Hydrochloric Acid and Glutamic Acid Therapy. P. Mahler.—p. 943.
*Symptomatology of Impairment of Posterior Roots ("Head Bending Symptom"). F. T. Münzer.—p. 945.
Therapy of Ozena. C. Velts.—p. 948.
Spirochetes of Multiple Sclerosis. P. Kuhn.—p. 950.

Gastric Secretion, Hydrochloric Acid and Glutamic Acid.—According to Mahler, the secretory action of glutamic acid has long been known, for it has been employed in the food industry for the preparation of flavoring extracts. His object was to study the influence of a compound of hydrochloric acid and glutamic acid on the function of the stomach and to determine whether the combination of the two acids is more effective than hydrochloric acid alone. He describes the various tests he made and gives tabular reports of their results, which indicate that in most cases the simultaneous action of hydrochloric acid and of glutamic acid exerts a greater influence on the gastric secretion (quantity of secretion, hydrochloric acid, chlorides) than does that of hydrochloric acid alone. The effect persists longer and the author never observed injurious effects from the large quantities of acids that were administered.

Symptoms of Impairment of Posterior Roots.—Münzer describes the case of a man in whom, after a diffuse trauma, active movement of the head was followed by paresthesias in the upper extremities. Examination revealed only a percussion sensitivity of the lower cervical vertebrae. In a woman with typical radicular sciatica, movement of the head against the chest caused a considerable exacerbation of the pains in the sciatic region. After the author's attention had been called to the phenomenon by these two cases, he observed it in a number of other patients. Since the pains or paresthesias as a rule develop only when the head is bent, and only in exceptional cases when the head is moved sideward, the author considers

the designation "head bending symptom" the most suitable. The manner in which the paresthesias develop indicates that they are caused by traction on the diseased roots. The passive movement of the head usually produces a more severe pain than does the active bending. The symptom is present in inflammatory, traumatic and various neurologic disturbances, and from this the author concludes that it is a local symptom rather than a type symptom. He stresses this to contradict Sterling, who described a "cervical root symptom" as characteristic of a syphilitic radicular neuritis. The head bending symptom is positive in conditions in which the roots are actually involved as, for instance, in infectious myeloradiculitis, but there are also processes in which it is a distant symptom; to the latter belong disorders in which the cerebral pressure is increased and in which the pressure is also exerted on the spinal roots.

Monatsschrift f. Geburtshilfe u. Gynäkologie, Berlin

94: 321-396 (July) 1933

*Uterus Duplex with Simultaneous Pregnancy in the Two Halves. P. von Salacz.—p. 321.

*Decidual Reaction of Tube in Intra-Uterine and Tubal Pregnancy and Its Significance for Etiology of the Latter. A. J. Osiakina and K. D. Schmatok.—p. 329.

Causes of Mortality of the New-Born. S. Liebmann.—p. 338.

Casistics and Problems of Injuries of Female Genitalia Caused by Pointed Instruments. E. Mosettig.—p. 357.

Can Cancer of Glands of Cervix Uteri Be Considered as Refractory to Ray Therapy? W. Haupt.—p. 364.

Twin Pregnancy in Double Uterus.—Von Salacz points out that in women with double uterus, if one half becomes pregnant, the empty half may be an obstacle during delivery, or it may be the cause of erroneous diagnosis in that it may give the impression of a myoma, of an ovarian cyst or even of an extra-uterine fetal sac. Positional anomalies of the fetus are likely in double uterus, and the deficient development of the musculature may lead to abortion, premature birth, perforation or weakness of the uterine contractions. A simultaneous pregnancy of the two halves of a double uterus is comparatively rare and the diagnosis may present difficulties. It has been pointed out that women with a double uterus frequently have an unusually large pelvis. The case of double uterus with simultaneous pregnancy in the two halves, reported by the author, is noteworthy because the pregnancy was brought to term, which is rare in double uterus, and, with the exception of an early detachment of the placenta, the anomaly caused no disturbances. The premature detachment of the placenta was probably due to mechanical factors. Both fetuses were delivered dead, but the puerperium was without complications. The author thinks that if the two halves of a double uterus are normally developed therapeutic interventions are unnecessary. However, if during gravidity severe functional disturbances develop (habitual abortion or habitual premature birth), or if a former delivery was difficult and dangerous on account of the anomaly, an operative unification of the two halves may be considered. This intervention has been done in some cases, and several authors report normal births following it. However, there is great danger of the surgical scar tearing during pregnancy or delivery or of disturbances in the uterine contractions, because the two halves of the uterus may contract independently. The author thinks that the operation is unnecessary in most cases, but constant supervision is advisable during pregnancy and, because the delivery may lead to complications, it should be done in an institution.

Decidual Reaction of Tube in Tubal Pregnancy.—In order to determine whether the decidual reaction of the uterine tubes is an etiologic factor in tubal pregnancy, Osiakina and Schmatok made microscopic studies on tubes from 100 women with tubal pregnancy and from 35 women with intra-uterine pregnancy. The tubes were obtained in the course of interventions for sterilization. The authors reach the following conclusions: 1. In intra-uterine pregnancy the tubal mucous membrane as a rule shows no decidual reaction. 2. In tubal pregnancy the decidual reaction of the tubes develops frequently as a defense reaction against the ingrowth of the chorionic villi at the site of nidation of the ovum; in these cases it is of course impossible to ascribe an etiologic significance to the decidual reaction. 3. In twenty-one cases of tubal gravidity the decidual reaction of the tubes developed independent from

the localization of the ovum. 4. In eight of these cases the tubal reaction was the cause of tubal pregnancy. 5. The decidual reaction can develop only in tubes with a deficiently differentiated mucous membrane and in the presence of cytogenic stroma, or if the mucous membrane is of the same structure as the uterine mucosa. 6. A deficient differentiation of the tubal mucous membrane is most likely favored by poor living conditions during the prepupal period.

Münchener medizinische Wochenschrift, Munich

80: 995-1034 (June 30) 1933

Criticism on and Suggestions for Treatment of Gallstone Disease. P. Morawitz.—p. 995.

Scoliosis. F. Schede.—p. 998.

*Diagnosis and Autovaccine Therapy of Actinomycosis. E. Payr.—p. 1001.

Modern Nutrition. W. Kruse.—p. 1003.

Buccal Leukoplakia. J. Rille.—p. 1005.

Psychopaths and Abnormal Characters. P. Schröder.—p. 1007.

*Atypical Syndromes in Hypophyseal Tumors. A. Bingel.—p. 1009.

Clinical Aspects of Arachnoidal Hemorrhages. F. Krause and B. Fuchs.—p. 1011.

Is Read's Formula Suitable for Determination of Basal Metabolism in Practice? Hartleben.—p. 1013.

Treatment of Agranulocytosis by Means of Pentnucleotide. H. Brugsch and J. Lautsch.—p. 1014.

Hemoglobin Determination. H. Schulten.—p. 1017.

Diagnosis and Autovaccine Therapy of Actinomycosis.—Payr states that the diagnosis of actinomycosis frequently requires repeated histologic examinations and exploratory excisions. It is advisable always to make a large number of cultures (from sixty to eighty) and, since Actinomyces is potentially anaerobic, not to neglect the anaerobic culture methods. The author's nonsurgical therapy combines oral iodine treatment, repeated roentgen irradiations and subcutaneous injections of autovaccine. He considers scraping inadvisable and thinks that it promotes the development of new abscesses. He obtained good results with the application of compound solution of iodine, iodoform glycerin and other preparations. The roentgen treatments are given in doses of 165 roentgens three times each week. The treatments are repeated after an interval of six weeks. The injections of the autovaccines have to be continued for long periods, even after the foci have apparently disappeared. The author has given from twenty to sixty injections over periods of six months or longer and has found that this prolonged vaccine therapy prevents relapses. He asserts that his procedure does away with disfiguring interventions in actinomycosis of the face, jaws, neck and parotid gland. However, primary foci of actinomycosis of the teeth and tonsils should be removed. In actinomycosis of the lungs, the pleura and the mediastinum, in which most treatments fail, the autovaccine therapy gives some prospect of success.

Atypical Syndromes of Hypophyseal Tumors.—Bingel gives the histories of five patients with tumors of the hypophysis in whom hypophyseal symptoms were either entirely absent or so slight that they were overlooked. Only in one patient was a hypophyseal disturbance thought of and a correct diagnosis was made in this patient and in one other, in whom a ventriculography was done on the assumption that a cerebral tumor might be present. In three patients the hypophyseal tumor was not found until a postmortem examination was made. To avoid such failures in diagnosis, the author advises that, just as every neurologic case is subjected to examination of the fundus oculi, it should likewise be the rule to make a roentgenogram of the cranium whenever a case is doubtful. This is the more justified since air filling is not necessary.

Zentralblatt für Chirurgie, Leipzig

60: 1697-1760 (July 22) 1933

*Contribution to Treatment of Arterial Embolism. H. Kohlmayer.—p. 1698.

Implantation of Testis on Kidney of Mouse. A. Lipschultz.—p. 1705.

Treatment of Central Dislocation of Hip by Traction on Great Trochanter. O. Winterstein.—p. 1710.

Pressure Syringe for Local Anesthesia. F. Hollenbach.—p. 1713.

Meckel's Diverticulum. H. Bock.—p. 1715.

Splinting of Fractures of Long Tubular Bones. Müller-Meernach.—p. 1718.

Prevention of Postoperative Effusion into Knee Joint by Forming Window in Capsule. F. Mandl.—p. 1723.

Treatment of Arterial Embolism.—Kohlmayer is concerned with the mechanical effect of an embolus on the blood vessel and with therapeutic possibilities arising therefrom, p.

ticularly in embolism of the upper extremities. The arteries of the lower extremities are the most frequent seat of embolic phenomena, as shown in the statistics of Bull, Petitepierre and Wolff and Heidrich. Petitepierre states that embolism of the main artery of an extremity leads to gangrene in most instances. The ability of the involved vessel to react to stimuli is a factor of importance. That arteries undergo a spasmodic contraction when stimulated has been established by Cohnheim in animal experiments. Petitepierre observed at the end of an embolectomy in a man a spasmodic contraction of the artery for a distance of 10 cm. This author believes that the arterial spasm following on the lodging of an embolus in an artery persists for twenty-four hours or longer and is followed by vasodilatation. In some instances this dilatation may be sufficient to allow the blood to get by the obstruction. The rationale of the internal administration of antispasmodic drugs, such as atropine, in cases in which operation may be contraindicated, suggests itself. The author reports two cases in which papaverine was administered intravenously in doses of 0.03 Gm. with remarkable results. The effects of the injection could be followed by microcapillaroscopic observations with the exactitude of an experiment. Fifteen minutes after the injection, the number of visible capillaries increased, the stasis in the veins was changed to a flow, and the white background changed to yellow or orange. Simultaneously the objective signs of arterial occlusion receded. Both instances were in the upper extremities. In one patient, a woman of 39, a complete disappearance of all signs of circulatory disturbance took place. In the second patient, a man of 60, while capillaroscopic observations demonstrated the effect of the drug, death supervened because of multiple embolic phenomena involving the brain and the internal carotid artery. The author concludes that good results from this treatment can be expected only when the embolus is small and the involved artery is not atheromatous, and therefore capable of reacting to a stimulus. Because embolisms of the arteries of the lower extremities are usually massive, it is questionable whether this treatment would prove effective. The treatment is in no way offered as a substitute for the accepted surgical treatment but rather as an aid or a substitute in instances in which the operation cannot be carried out.

Zentralblatt für Gynäkologie, Leipzig

57: 1505-1568 (June 30) 1933

- *Roentgenologic Diagnosis of Malformations of Fetus. G. K. F. Schultze.—p. 1508.
- Roentgenologic Measurement of Pelvis According to Guthmann. F. Friedl.—p. 1512.
- Misuse and Failures of Hypophyseal Extracts in Obstetrics. H. Fuchs.—p. 1519.
- Anesthesia by Means of Sodium Salt of a Barbituric Acid Derivative: Dosage. O. Köster.—p. 1524.
- Suppurative Meningitis Following Meningeal Hemorrhage in New-Born Infant. E. Neter.—p. 1528.
- *Dangers of Induced Abortion. W. Spitzer.—p. 1530.
- Congenital Atresia of Esophagus with Multiple Tracheo-Esophageal Fistulas. B. Szendi.—p. 1534.

Roentgenologic Diagnosis of Malformations of Fetus.—Schultze points out that the possibility of roentgenologic visualization of fetal deformities was demonstrated as far back as 1914. He discusses particularly the malformations of the head. In the women's clinic of the university of Berlin a number of cases of anencephalus have been detected by roentgenoscopy. However, of much greater importance than the early recognition of an anencephalus, which usually does not cause obstetric complications, is the early diagnosis of hydrocephalus, because the delivery of the large head may lead to difficulties. There are cases of hydrocephalus in which a definite diagnosis is not possible without roentgenoscopy in various planes. The author emphasizes that the estimation of the size of the head alone is not sufficient for the diagnosis of hydrocephalus. In a twin pregnancy he observed that one head appeared much larger than the other, but when the heads were measured after delivery they were found to be of the same size. He advises observation of the size of the head, of the fontanels, of the skeleton of the face, which in hydrocephalus appears unusually small and compressed, and of the proportion of the trunk to the head.

Dangers of Induced Abortion.—Spitzer says that in Germany it is estimated that 25,000 deaths a year are caused by induced abortions. He thinks that this estimate is too low

rather than too high. The fatalities occur primarily in abortions performed in private homes, and for this reason the author welcomes the law stipulating that in Czechoslovakia abortions induced for certain indications are to be done only in hospitals. He reports 162 abortions induced in the university women's clinic in the course of the last five years. He shows the causes that made interruption necessary, the ages of the women, the months of pregnancy during which abortion was induced, the methods employed and the morbidity. There were no deaths, but he discusses the dangers that were encountered, the greatest of which was infection. Injuries, hemorrhages and complications from the adnexa were comparatively rare. The single instrumental interruption involved the least danger of infection, and it was done in nearly 50 per cent of the cases; that is, in all cases in which the pregnancy had not advanced beyond the third month. However, three cervical tears resulting from the use of Hegar's dilator show that this method also has its shortcomings. Because of its greater danger of infection, the laminaria method was employed only when a moderate method was necessary or when the use of Hegar's dilator was unsuccessful on account of a rigid cervix. In the more advanced stages, vaginal section was found to be the most reliable method. Metreuryasis was done only in rare cases, for a morbidity rate of 25 per cent shows that this method is fraught with too much danger. The methods employed in the material studied by the author gave, on the whole, good results, and he does not feel justified in abandoning them in favor of the recently proposed intra-uterine injection of abortifacient ointments, especially since the latter have caused a number of fatalities.

Acta Chirurgica Scandinavica, Stockholm

70: 481-590 (July 14) 1933

- Contribution to Conception of Osteogenesis Imperfecta Congenita and Osteospathyrosis Idiopathica as Identical Disorders. K. Biering.—p. 481.
- *Frequency, Nature and Pathologic Significance of Malformations of Kidneys and of Urinary Tract. F. Roscher.—p. 493.
- Spontaneous Rupture of Quadriceps Femoris Muscle in Old Tabetic Patient Cured by Operation. S. I. Riswasch.—p. 541.
- Solitary Nonparasitic Liver Cysts. I. Sandberg.—p. 555.
- Congenital Renal Ectopia. F. Settergren.—p. 563.

Malformations of Urinary Tract.—Roscher presents a study of malformations of the urinary tract based on postmortem material of the anatomopathologic institute of the Norwegian University Clinic at Oslo for the period 1914 to 1930. The author divides the material into two groups. Group 1 comprised 1,532 sections on new-born children with forty instances of malformation of the kidneys and the urinary tract, a percentage of 2.6. Group 2 consisted of sections on 3,995 older children and adults with an incidence of malformation of the kidney and the urinary tract in 104, a percentage of 2.6. The author draws attention to the occurrence in Group 1 of hydronephrosis in combination with anomalies of the ureter. In addition to instances in which strictures, valvular formations and dilatation of the ureter seemed responsible for the hydronephrosis, he has likewise observed this association without strictures. He concludes, therefore, that hydronephrosis and ureteral dilatation may be regarded as a malformation. Of the eleven instances of cystic kidneys, nine presented malformations elsewhere in the urinary tract, thus suggesting that the condition, at least in its origin, is likewise a malformation. In group 2 there was an incidence of 0.75 per cent of aplasia or of hypoplasia of one kidney. In most instances, renal aplasia was associated with aplasia of the ureter. About 50 per cent of hypoplasias were associated with hydronephrosis. Hydronephrosis was unilateral in fourteen and bilateral in fourteen. It was usually associated with malformations of the ureters such as dilatations or valvular formations without, however, producing a true obstruction. Among the twenty-eight instances of hydronephrosis there were nineteen of pyelonephritis and one of pyelitis. Only two patients had calculi. Of the eleven instances of cystic kidney, two were characterized by familial origin belonging to a "family of cystic kidneys." Ectopy of the bladder was seen four times and in three it was associated with other malformations of the urinary tract. The instances of deformed, dystopic and horseshoe kidneys were always accidental observations and without any pathologic significance.

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THE FOUR MAJOR PROBLEMS IN GYNECOLOGY

CHAIRMAN'S ADDRESS

BARTON COOKE HIRST, M.D.

PHILADELPHIA

A long observation of the ills of womankind dictates the choice of carcinoma of the uterus, maternal mortality in childbirth, sterility and birth control as the great problems of gynecology today and in the immediate future.

CANCER

One of every eight women who reach the age of 35 will have a cancer. The disease ranks second among the causes of death in America. The mortality is increasing, rising from 63 to 96 per hundred thousand in seven years, or more than 50 per cent. In Philadelphia the mortality rose from 77.6 to 136.94 from 1907 to 1932, and in fifty American cities during the same time from 75.1 to 122.7. Of cancers in women, 25.83 are in the genital organs; 80 per cent of these are in the cervix uteri. Of four women who come to a physician with cancer of the cervix, one may survive. In spite of skilful treatment, three will die within five years. The proverbial ounce of prevention is the best treatment of cervical cancer. The late John G. Clark once said he never saw a cancer in the cervix if it had been successfully repaired. While I couldn't quite agree, undoubtedly the immediate, intermediate or secondary repair of the cervix after childbirth will usually prevent a cancer there later in life. A specific remedy for cancer may be unexpectedly discovered by the intensive study of it in all parts of the world, but at present its early recognition and prompt eradication give the best chance for a cure. Class I of the League of Nations classification of cancers of the cervix in which the disease is confined to that locality has a 50 to 80 per cent five year recovery rate: class IV, in which vagina, bowel and bladder are also involved, a cure rate of 2 per cent or none at all. The whole problem of securing better results resolves itself, therefore, into the best means of recognizing the disease early.

An important aid to an early diagnosis is Schiller's test with the use of Hinselmann's colposcope. Experience with it encourages the belief that removal and microscopic examination of the unstained cells permit the earliest diagnosis of cancer of the cervix. The colposcope may be replaced by the more economical and portable binoculars with spectacle attachment, $\times 2.5$.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

For the opportunity of making early diagnoses, periodic health examinations, especially in child-bearing women, should be incessantly advocated.

In the treatment of cervical cancer the high mortality of the radical operation, the negligible mortality of radium application, the approximate equality of results, the shorter hospitalization, the absence of suffering, the palliation of symptoms, the little skill required and the fact that radium alone can be considered in advanced cases have relegated surgery to a subordinate place. It cannot, however, be ignored. It plays a predominant rôle in cancers of the genital tract other than of the cervix uteri. It must be used if radium fails. It must be considered in early cases suitable for vaginal hysterectomy without glandular involvement, with its low primary mortality (from 3.5 to 6.6 per cent, Weibel) and its high rate of permanent cure (98 per cent, Wertheim). In the recollection of gynecologists whose experience antedates radium and Wertheim's radical operation, many a permanent cure by the simple panhysterectomy is remembered. The radical hysterectomy, however, should usually be attempted if surgical treatment is adopted. To know what it is, one should have seen Wertheim do it or should read Victor Bonney's description of its technic. It is as difficult as any operation in surgery and has a mortality of 16 per cent in the hands of expert surgeons. Only unusual experience, skill and dexterity obtain better results. Wertheim himself in the first 1,000 of his 1,500 operations had a mortality of 16 per cent, and so did Bonney in his first 227. Although both reduced their mortality to 9 per cent, few could hope to rival them. The advantage of the radical operation lies in the removal of the regional pelvic glands, 21 per cent of which were cancerous in Wertheim's statistics, 43 per cent in Bonney's and 50 per cent in Heyman's. Bonney sums up the results of surgical treatment of cancer of the cervix uteri by saying that out of every hundred patients seen by the surgeon sixty are operated on, and of these twenty-five are free of the disease five years later.

The advocates of radium treatment are in the great majority. Almost all the prominent gynecologic clinics of the world have deliberately turned from surgery in cancer of the cervix to radium, not to mention the radiologic clinics with no provision for surgery.

There is a place for combined operative treatment and radium. High trachelectomy with the electric knife and radium afterward gave Clark and Norris 83 per cent of cures in early cases. The choice of radium applications or surgery will be better made by the physician who has had training in both treatments and is capable of undertaking either one.

As the results of any treatment of carcinoma of the cervix depends on the percentage of operable cases, it is interesting to note the increase of operability. It is

understood that the conditions called operable or inoperable are determined to a certain extent by the personal equation of the examiner and that inoperable is not synonymous with incurable. As many as from 11 to 17 per cent of these so-called inoperable cases show a five year cure with radium and most gynecologists can recall an occasional patient restored to perfect health by radium when recovery seemed impossible.

Thanks to the widespread propaganda that has made women cancer conscious, too much so perhaps for their peace of mind, and has made physicians more alert in looking for it, the proportion of operability in cancers of the cervix is increasing. In 3,913 cases reported at the congress of the American College of Surgeons in October, 1932, operability averaged about 30 per cent. In 1,574 cases reported by W. P. Healy from the Memorial Hospital, 1,377 were borderline or advanced. Forssell and Heyman in Stockholm, up to 1926, treated 1,157 cases of which 73.3 per cent were inoperable. Heyman's statistics of 3,512 cases from seventeen radiologic clinics showed more than 70 per cent of inoperability. Forssell reports that in his radiumhem in Stockholm the inoperable cases increased threefold but the operable increased tenfold. Wertheim found an operability of 50 per cent, rising in his last series of cases to 54 per cent. Bonney claims an operability of 60 per cent. In Weibel's clinic in Prague in the first half of the year 1929 the operability rose to 77 per cent. These figures show a considerable rise in average operability, those that follow a corresponding increase in the proportion of cures. In 1927, Heyman in 5,024 cases collected from twenty surgical clinics and in 2,512 from seventeen radiologic clinics found a five year cure rate of 18 per cent and 16.3 per cent, respectively. In the radiumhem of Stockholm the absolute cure rate was at that time 20 per cent. In 1930 Bowing and Fricke, from the Mayo Clinic, reported a 23.87 per cent cure rate in 1,000 cases. In 1931, Healy in his report of 1,574 cases stated that a cure rate of from 20 to 22 per cent may be expected. Heyman in the same year reported a rate of 25 per cent five year cures from Stockholm. This year, George Gray Ward has reported an absolute cure rate of 24.8 per cent and Kelly, in 1,578 cases, 22.3 per cent. Lacassagne reports from the Institut du radium in Paris a cure rate of only 10 per cent in 1919 but, in 1926, 36 per cent of cures in ninety-eight cases. From 1919 to 1926, in 678 cases, the average of five year cures was 26 per cent. Voltz in Munich from 1913 to 1926 in 1,866 cases admitted and 1,723 treated, reports an absolute cure rate of 18.5, but from 1924 to 1926 in 404 cases a cure rate of 24.5 per cent. Bonney, as stated, asserts that a 25 per cent five year cure rate is the best that surgery can do, but he points out that 10 per cent of these survivors will die before the tenth year.

From 1927 to 1933, the average rate of cure has risen from 17 per cent to 28.32 per cent. The latter average should have been about 25 per cent but was raised to the figure quoted by the exceptional cure rate reported by Lacassagne in a comparatively small number of cases (98).

Cancer of the cervix uteri in pregnancy does not show an increasingly early recognition in America. There is a striking disproportion in the number of cases in pregnant women reported in this country and in Europe. In Wertheim's 3,184 cases of cancer of the cervix, operable and inoperable, 26 women were pregnant, with an operability of 96 per cent. In answer to

a questionnaire directed to all the great maternity centers in America, the number of cancers of the cervix complicating pregnancy was surprisingly small. The greater prevalence of cancer in Europe accounts for this discrepancy in part but not entirely. It is probably due to a neglect of routine specular examinations in pregnant women and to a disposition to attribute irregular bleedings in pregnancy to an intra-uterine source. Another error prevalent in these cases is the postponement of treatment till after delivery instead of immediate eradication regardless of the fetus.

Accumulating statistics show a superiority of results from a combination of x-rays and radium. Voltz from Munich reports 2.2 per cent more cures from the combined treatment than from radium alone (39.3 to 41.5 per cent). There should therefore be a collaboration between the roentgenologist and the gynecologist in the treatment of cancer of the uterus.

Dr. Lee of the Memorial Hospital in New York sensibly advocates the establishment of cancer institutes in all large centers of population in the country with an ample supply of radium for local and distant use, modern x-ray equipment and a threefold activity—research, clinical treatment and instruction—with a staff of units skilled in the management of the different regional manifestations of the disease. These institutes should be in communication to standardize treatment, avoiding the diversity in the technic of radium application, its dosage, screenage, spacing of treatments and x-ray exposures observable at present in the largest cancer institutes and clinics in Europe and America. There are in Europe the well known Paris, Stockholm and Munich plans of treatment. In this country each clinic has some individual method. It should surely be possible to agree on a standardized plan giving the best results. There should be provision for both surgical and radium treatment to avoid restriction to one plan alone.

MATERNAL MORTALITY IN CHILDBIRTH

Among many advances in medical science in which America has had its share, one defect stands out all the more glaringly in contrast with so much that is creditable. The maternal mortality of childbirth in the United States is too high. After long years of indifference, this subject is attracting increasing attention both from physicians and from the public. A hopeful sign of prospective improvement is the determination of our profession to find out what is the matter with us by a survey of actual conditions conducted recently in large urban centers. A surprising result of these investigations is a mortality many times greater in hospitals than in private homes, six times greater in the Philadelphia survey with which, as one of the investigating committee, I am most familiar. To an advocate of the hospitalization of child-bearing women, this statement is disheartening but appears less so on further thought. The hospital is the clearing house for the complicated cases in its neighborhood. It is not every hospital that shows a disproportionate death rate. In the Philadelphia Lying-In Hospital in 7,068 cases the absolute maternal death rate, without any deductions, was 7.3 per thousand; the corrected death rate, 6.2 per thousand, compared favorably with maternal mortality for the United States in 1931, 6.6 per thousand. It is the poorly equipped and poorly constructed open hospitals that raise the average mortality of all hospitals. In the New York survey it appeared that fatal cesarean sections had been performed by proc-

tologists, laryngologists, anesthetists, general surgeons, roentgenologists: all sorts of physicians without any pretense to special training. Among the defects of these open hospitals are lack of provision for isolating infected cases, promiscuous mingling of maternity cases with other patients, and poor technic, described exhaustively in a recent publication by Dr. De Lee.

The solution of this problem is not the limitation of the hospitalization of maternity cases, as might be thought in view of the high institutional mortality. On the contrary, the hospitalization of these cases, already amounting to two thirds or three fourths of the deliveries in many cities, a proportion steadily increasing, should be further encouraged. The equipment of a good hospital is infinitely better than that of the best private house; a position on its staff should be a guaranty of adequate skill, and women have discovered the greater economy of the hospital delivery. Moreover, the repair of injuries of the genital tract and the correction of displacements of the uterus, in the postnatal care, which should continue for a year, eliminates more than 60 per cent of the diseases of women. The regulation of the hospital is practicable. The control of private house practice is not so feasible. The way to improvement therefore is the rigorous inspection of all hospitals receiving maternity cases; only those being licensed in which equipment, construction, character of the staff and its organization, aseptic technic, morbidity and mortality, incidence of operative deliveries and their results, prenatal and postnatal care, fetal mortality and infantile mortality reach the level of the best modern requirements. If there is a courtesy staff, its members should be allowed to attend only normal, spontaneous deliveries or at the most use low forceps and should be compelled to adhere strictly to a well established technic.

In the private house deaths, the chief fault is the lack of prenatal care. More than half the fatal cases of toxemia had inadequate antepartum attention or none at all. In addition to the regulation of the hospitals, the results of deliveries in physicians' private practice might be supervised in a modified way as they are in the midwife's practice in Philadelphia. These cases are inspected and the results reported by a corps of investigators to Dr. William R. Nicholson, who for years has devoted himself to this work with admirable self-sacrifice and public spirit. The result has been a better record of morbidity and mortality in midwives' than in physicians' practice.

The state boards of licensure should supervise maternity hospitals and, to a certain extent, private practice in such cases as well. An annual inspection of the hospitals would not be an onerous burden. The control of private practice is a more difficult matter. It could be managed tactfully in fatal cases by imitating the Philadelphia midwife supervision, physicians enjoying the confidence and respect of the communities in which they live being appointed for subdivisions of the state, to whom confidential reports and explanations of fatal results in childbirth should be made, with ultimate reference to the central board of cases in which the physician was guilty of neglect, ignorance or incompetence. Expectation of supervision would minimize carelessness or neglect by physicians. As a foundation for all improvement, the training and education of medical students in the care of child-bearing women should be improved. It is still inferior to such training in Europe in clinical material and in the time devoted to it.

It is quite plain what is the matter with us. Have we the loyalty to our profession to correct its faults?

The survey in Philadelphia coinciding in the main with others, carried out carefully by practical physicians with large experience, making every allowance for the physician in charge of a fatal case showed that half the deaths were preventable. When the public realizes that every year the lives of thousands of women in this country are needlessly lost at the most appealing period in their existence, that probably half of the 13,964 puerperal deaths in the United States in 1931 could have been prevented, there will be an irresistible demand for reform. It is to our interest to anticipate this demand voluntarily rather than have it forced on us.

STERILITY

The third problem, involuntary sterility, will be passed over hurriedly, not because it is unimportant, for no more baffling intricate problem is presented so often to the gynecologist by increasing numbers of women pathetically longing for children; but this address has already encroached too much on time better devoted to hearing the contributions to the scientific session. Moreover, the causes, treatment and prognosis of sterility are as well known to my auditors as to me. There is perhaps one item in its treatment that is not always considered. Because of the frequent references in German literature to roentgen treatment of the pituitary gland in cases of sterility, a questionnaire was sent out quite recently to the principal roentgenologic centers in this country. Many had no experience with it. A study of the statistics of those which had, as well as of the German records, made it impossible to resist the conclusion that exposure of the pituitary gland to x-rays is a necessary part of a complete treatment of sterility, as every one who has tried it must admit.

BIRTH CONTROL

Passing now to voluntary sterility or birth control. I approach a subject fraught with more momentous possible consequences to our country than any other confronting it. An undue limitation of fecundity has been one of the precursors to the extinction of a civilization or the subjugation of a people by a more virile and prolific race. The United States has already gone some distance on this road. The birth rate in 1929 was 18.9 per thousand, the lowest for any year since the establishment of the birth registration bureau in 1915, when it was 25.1 in ten states. In 1931 it was still lower, 18. An estimate of barren marriages in 1924 was 13 per cent; in 1928, 17 per cent. There were 1,232,559 marriages in the United States in 1929; in 1931 only 1,060,554, a rate of 8.55 per thousand of population, the lowest ever reported in the United States. Although the population had increased by two millions and a half there were 172,005 fewer marriages. In the report of the President's Research Committee on social trends it appears that the average size of the American family, 3.67 in 1900, 3.58 in 1920 and 3.57 in 1930, is steadily shrinking. In Philadelphia last year there were 10,000 fewer births than there were ten years ago. The birth rate in 1932 sank to 16 per thousand.

There is so much to be said on this subject that its discussion might reach unconscionable lengths. For the sake of brevity let an advocatus diaboli, reversing his usual function, plead for birth control and an opposing counsel answer him.

Pregnancy is incompatible with health or existence in some women. Birth control or sterilization in them is necessary. Artificial sterilization is justifiable to prevent the propagation of mental defectives, as in the 6,250 operations in California. It is possible to secure temporary sterility, as shown by Baskin in twenty women injected intramuscularly with 3 cc. of fresh seminal fluid and 1 cc. of caprokol (hexylresorcinol). These injections given three times, seven days apart, produce spermatoxins in the blood serum that give immunity from conception for a year. The degree of toxicity and immunity is tested at intervals of three months by bringing the woman's serum in contact with live spermatozoa. The clinical advantage of a temporary sterility in many cases is obvious.

The spacing of children contributes to the health of the mother. Longer intervals between births results in the production of superior children. A few children receive better nourishment, care and education than is possible with a large family. Infantile mortality is less in small families. Too rapid an increase in population increases the difficulty of obtaining a living wage. The removal of fear of frequent pregnancies from the wife makes the conjugal relation less liable to maladjustment. The satisfaction of the sexual urge in both husband and wife makes infidelity less likely.

Now audite alteram partem.

The first three propositions are admitted. The rest are disputed. He who believes the altruistic motives claimed for birth control, in the quaint English of Sir Thomas Browne, "looks Asquint on the face of Truth." The underlying motives of birth control are usually selfishness or fear. The bad effect on the mother of frequent child-bearing is exaggerated. Maria Theresa had sixteen children, successfully enduring nevertheless a physical and mental strain few women have to bear until she died at 63. I once attended a remarkably healthy woman in her twenty-third childbirth. It is not certain that spacing children improves their quality. Benjamin Franklin, the greatest intellect and the second figure of the American Revolution, was his father's fifteenth child. He wouldn't be born today. How many geniuses and benefactors are lost to the world! Gray, in the church yard of Stoke Poges, musing on the obscure lives of the forgotten dead buried there, were he now alive might wonder how many million mute, inglorious Miltons and Cromwells, guiltless of their countries' blood, never have a chance to live at all. It is doubtful whether the pampered child and a half of the American family is better than the child of a former generation with eight or nine brothers and sisters. The social virtues are better cultivated in a large family with the necessity for mutual concessions and for self improvement to face the battle of life. It is questionable whether the struggle for existence is so much aggravated in a dense population. There are more consumers to absorb the surplus products of mass production and to stimulate foreign trade. Belgium has a population of 680 to the square mile: the United States has only 41.3. A comparison of the welfare of the two countries would not now be much in our favor.

A lady returning to her physician after a visit to a birth control clinic was asked what she thought of it. "Oh," she replied, "it is so unromantic." She meant that the use of implements and methods employed in illegitimate intercourse lowered the spiritual level of the conjugal state. It would better comport with dignity to advise a degree of continence nearer the asceticism of

the author of Religio Medici, who wished we could perpetuate our species like the trees, deploring the vulgarity of the way we do it, than the unbridled license of Augustus the Strong with his reputed 365 children. A counsel of perfection no doubt, but so should our counsel always be, whether any one follows it or not.

Articles are appearing in German literature on subjects receiving little or no attention from us: "Damage to the embryo from chemical contraceptives." "Can unsuccessful contraception harm the embryo?" "The relation of contraception to ectopic pregnancy." Dr. Schwartz and Professor Gött of Bonn report two cases each of malformed children, whose defects of development they attribute to chemical contraceptives that did not destroy but injured the spermatozoa, with the consequent formation of an imperfect product of conception. Professor Labhardt attributes a fourfold increase of tubal pregnancy in his clinic to the various contraceptive measures employed in Basle, and Professor Guggisberg of Bern finds the same conditions there. I often see acute, suppurative vaginitis due to the use of the occlusive pessary. In the opinion of most experienced observers, the long practice of contraception is one of the causes of sterility when the couple eventually desire children.

Ill fares the land, to hastening ills a prey, where the population increases by the multiplication of the inferior strata and the relative decrease of the superior. A striking example of what is meant is a comparison of the birth rate of the United States, 18 per thousand, with that of North and South Carolina, Alabama, West Virginia and Mississippi, averaging 23.7, owing to the Negroes. It is the same to a less degree everywhere. The people who could transmit the best heredity practice birth control extensively and successfully; the less intelligent, not nearly so generally or successfully. A long continuance of such conditions inevitably ends in the decadence of a race. This statement has peculiar significance for the United States. In addition to the fatal mistake of transporting Negroes to the North American continent, where they were not indigenous, the immense immigration of late years brought to this country some racial strains that were certainly not the best. These people are contributing more than their share to our population. If a breeder of live stock defied the laws of eugenics as we do, he would be ruined. We might well ask ourselves if our loss of wealth, the venal government of cities and states, the ineptitude of Congress, the prevalence of crime and the wave of dishonesty that has swept the country are signs of a deterioration in the national character.

Say what we will, contraception has passed beyond our control, but an occasional note of warning of the possible consequences should come from the superior knowledge of the medical profession.

CONCLUSION

In attempting to review so much in so short a time, I am aware that I give only the merest hints that may, perhaps, incite others to more productive thought, especially the younger members of the profession. They begin where we leave off. They commence with all the knowledge we elders gained by laborious lives of study, experience and research. We may confidently leave to them the problems vexing us. It is certain they will reach far higher levels of achievement than we have attained.

1821 Spruce Street.

SIGNIFICANCE OF THE IODINE CONTENT OF HUMAN BLOOD

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That a relation exists between the activity of the thyroid gland and the metabolism of iodine is undeniable. The thyroid hormone has a high iodine content. It is now established that iodine is a constant constituent of human blood. There is also a constant daily excretion of iodine in the urine. The level of the blood iodine varies, likewise the amount lost daily in the urine. There is a pregnant significance to these newer facts as applied to the problem of disease of the thyroid.

The nature of this relationship between goiter and iodine has been further clarified during the past decade. A part of this has resulted from studies made on the effects of iodination. More has been learned subsequent to the development and application of more accurate micromethods for the determination of minute amounts of iodine.

After extensive investigation it has become apparent that the level of the blood iodine is influenced by changes in thyroid activity. In this our observations confirm those of Sturm, Lunde and other investigators. We shall present at this time a summary of our principal observations, reserving more extensive details for other publications.

HISTORICAL BACKGROUND

The ancient use of burnt sponge in the treatment of goiter was a fortunate empiricism. Following the discovery of iodine, its presence in sponges was soon demonstrated. As a natural consequence Coindet used iodine in the treatment of goiter in 1820. Many of the problems which he then raised are still unsolved. Since Coindet, iodine and the goiter problem have been inseparable.

Subsequent investigation led to Prevost's theory in 1849. This pointed out the relation between iodine deficiency and the incidence of goiter. It was substantiated by the chemical studies of Chatin. After the unsuccessful French experiment, in 1860, the significance of iodine received a setback. During the ensuing thirty-five years there arose other theories as to the nature of goiter. It was during this period that the theory of infection gained in credence. This was doubtless due to the contemporary discoveries of Pasteur.

Unsuccessful attempts had been made to demonstrate the presence of iodine within the thyroid gland. Baumann accomplished this in 1895. He demonstrated the isolated iodine in tubes, in its characteristic violet vapor form. The significance of this contribution was widely appreciated.

Kendall isolated thyroxine in 1919. This crystalline substance possesses certain of the physiologic proper-

ties of the dried whole thyroid gland. The isolation was repeated by Harington, who determined the correct molecular structure. Working from this he succeeded in synthesizing thyroxine. Thyroxine is 65 per cent iodine.

The next advance was in more extensive investigation of iodine metabolism. At once arose the necessity of developing methods sufficiently sensitive, and at the same time sufficiently accurate, to determine minute amounts of iodine. The thyroid iodine is readily determined by the older, coarser quantitative methods. This is not true for blood and urinary iodine. For many years various methods had been devised for the determination of iodine in food and water supplies. None of these was sufficiently delicate even to detect the minute amount of iodine normally present in the usual amount of human blood obtainable for analysis.

In 1923 von Fellenberg developed an adequate micro-method. He devised, perfected and eventually synthesized the known existing quantitative procedures into a true micromethod for the determination of iodine. This will determine 0.0001 mg. Two of von Fellenberg's pupils, Sturm and Lunde, soon applied his method in an extensive study of patients with goiter. This was opened a new approach to the conception of thyroid function in health and in disease.

In following the fate of iodine within the body it was inevitable that attention should be directed to the blood. In 1899, Gley and Bourcet, unable to demonstrate the presence of iodine in 100 to 200 cc. samples, used a liter of blood for analysis. They were thus able to demonstrate the presence of iodine in mammalian blood. This was subsequently confirmed by some, but denied by others. The earlier analyses were quantitatively inaccurate as judged by modern studies. The "first modern figure" is that of Kendall, 0.013 mg. per hundred cubic centimeters for ox blood. Attempts have subsequently been made to separate the blood iodine into an "organic" fraction and an "inorganic" fraction. The "organic" fraction is alcohol-insoluble, and is presumed to be in protein combination. The "inorganic" fraction is alcohol-soluble and dialyzable.

METHOD

The method which we have used for the determination of iodine in the blood and urine is one that requires experience and a certain amount of technical skill. Its success in the ordinary clinical laboratory would be doubtful. The basic chemical principles involved are those developed by von Fellenberg. An automatically controlled muffle furnace and an electric hot plate have been utilized for standardization and economy of time.

The blood or urine to be analyzed is measured into a nickel crucible and mixed with an adequate amount of potassium hydroxide. This binds the iodine and also facilitates the hydrolysis of the organic matter present. After ashing completely the content of the crucible, at a carefully controlled optimum temperature, the water-soluble salts are extracted. This extract is evaporated to dryness. The salts soluble in alcohol are then extracted with 95 per cent ethyl alcohol. The alcohol is evaporated. The dry film containing the iodine salts is dissolved in water. The pH is adjusted. The iodides present are oxidized to iodates with chlorine water. The excess chlorine is boiled off. A crystal of potassium iodide is next added and the quantitatively liberated elemental iodine is titrated with thousandth-normal sodium thiosulphate, using starch as an indicator.

NORMAL BLOOD IODINE

The average normal iodine content of human blood examined in Chicago is about 12 γ per hundred cubic

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centimeters. This level falls during the winter months. It is elevated during early menstruation and pregnancy. It is higher if the person is taking iodized salt regularly. In fact, many observations show that it is elevated by any form of iodine medication that has thus far been studied. Owing to the minute amount of iodine normally present within the blood, a special term of designation has been widely adopted. This, a gamma (γ) or microgram, is 0.001 mg. Thus, 100 cc. of human blood normally contains 0.012 mg. of iodine. The total iodine contained in the entire human blood stream is consequently less than 1 mg.

Eight determinations, made on six normal members of the Billings Hospital staff, revealed a range of from 8.9 to 13.8 and an average of 12 γ per hundred cubic centimeters. The determinations on the women were made during the intermenstrual period, since the blood iodine usually rises during the onset of menstruation. Corresponding basal metabolic determinations were not made; however, these persons showed no evidence of abnormal thyroid function or of disease.

A second series of thirteen determinations was made on unselected hospital patients without evidence of thyroid disease. No iodized salt was used in the hospital diet. Blood was drawn in the postabsorptive state. The average value was 12.3 γ per hundred cubic centimeters. In the majority of hospital patients without evidence of abnormal thyroid function the blood iodine is normal. There are certain notable exceptions, such as acute severe infections and lymphatic leukemia, in which the blood iodine is elevated. These will be mentioned later. The significance of the elevated iodine of the blood in lymphatic leukemia merits further investigation.

A third series of determinations was made on twelve ambulatory patients visiting the outpatient department. Their diets, consequently, were not controlled, and certain of the bloods were not drawn in the postabsorptive state. The range, from 8.5 to 16.2 γ , is thus greater. Nevertheless, the average level, 11.4 γ per hundred cubic centimeters, is essentially that which we have found to be normal. None of these patients was using iodized salt, and none was acutely ill. Their ages ranged from 6 to 48 years. In all, thirty-four determinations on twenty-eight persons in Chicago without evidence of thyroid disease showed a range of 8.5 to 16.2 and an average level of 11.9 γ per hundred cubic centimeters.

The blood iodine of twenty-five normal persons in Columbus, determined from December to March inclusive, showed a range of from 5.2 to 14.2 and an average level of 10.1 γ per hundred cubic centimeters. There is thus a lowering of the normal level of the blood iodine during the winter months. This was originally observed by Veil and Sturm. The basal metabolic rate, determined in each of these persons just previous to drawing the blood, ranged from minus 11 to plus 15, averaging plus 2. No direct correlation between the level of the blood iodine and that of the basal metabolic rate has been established. The average level of the blood iodine in the females was definitely lower than that in the males.

EXOPHTHALMIC GOITER

In patients with diffuse hyperplastic goiter, presenting the characteristic symptoms of hyperthyroidism and with varying degrees of exophthalmos, the blood iodine

is consistently elevated. It falls to a certain extent on rest in bed. It remains elevated after the first stage of a two-stage lobectomy or after an inadequate thyroidectomy. It falls to a low normal level subsequent to the adequate removal of the goiter.

In eleven of these patients the initial level of the blood iodine, determined before the institution of rest in bed and the initiation of iodine therapy, ranged from 16.9 to 40.1, averaging 27.1 γ per hundred cubic centimeters. This is more than twice the normal level. The initial basal metabolic rate in these eleven patients ranged from plus 22 to plus 96, averaging plus 50. No direct correlation has been observed between the level of the elevated blood iodine and that of the increased basal metabolic rate.

The institution of complete rest in bed frequently results in a subsequent lowering of the elevated blood iodine. There is usually some accompanying fall in the basal metabolic rate. This fact is of theoretical interest in connection with the extent of increased thyroid secretion during physical activity. It merits further investigation.

Subsequent to the administration of iodine to patients with exophthalmic goiter there ensues a marked rise in the level of the blood iodine. During treatment with compound solution of iodine this may even reach 600 γ per hundred cubic centimeters. This elevated level is irregularly maintained so long as iodine is administered. It quickly falls on cessation of iodine administration. It also falls following thyroidectomy, but continues elevated above normal as long as iodine is given post-operatively. After the cessation of iodine medication, if the thyroidectomy is adequate, the blood iodine promptly falls to a low normal level.

If the thyroidectomy is inadequate, the elevated blood iodine does not subsequently fall to a low normal level. Likewise, following the first lobectomy of a two-stage operation the blood iodine remains elevated. In four of these patients the range was from 19.4 to 32.0, averaging 27.1 γ per hundred cubic centimeters. The average basal metabolic rate in these patients was plus 31. This may be interpreted as further evidence that the elevated blood iodine is due to hypersecretion by the goiter of the high iodine-containing thyroid hormone.

After an adequate thyroidectomy, followed by the usual abatement of the characteristic symptoms, together with the subsequent fall in the basal metabolic rate, the blood iodine falls to a low normal level. In twelve such patients the range was from 8.7 to 14.3 γ per hundred cubic centimeters, averaging 10.4 γ . The average basal metabolic rate was minus 6. All these determinations were made on patients who were not receiving iodine medication.

Children with exophthalmic goiter likewise present, along with the high basal metabolic rate, an elevated blood iodine. This behaves as does that of adults during the management of the disease. There thus appears to be a definite relationship between the elevation of the blood iodine and the course of exophthalmic goiter.

TOXIC NODULAR GOITER

The blood iodine is also elevated in patients with nodular goiter who present an increased basal metabolic rate and the symptomatic evidence of hyperthyroidism. The elevated blood iodine of these patients falls to a low normal level subsequent to an adequate thyroidec-

to my. In eleven of these patients the initial blood iodine, previous to the institution of iodine therapy, ranged from 14.1 to 38.1, averaging 22.0 γ per hundred cubic centimeters. The basal metabolic rate of these patients averaged plus 26. The lesser elevation of the blood iodine in toxic nodular goiter thus corresponds to the lesser increase of the basal metabolic rate and, in general, to the lesser severity of the disease. In these patients there was likewise no direct correlation between the increase in the basal metabolic rate and the elevation of the blood iodine.

Twenty-three determinations of the blood iodine were made on twelve of these patients after an adequate thyroidectomy. These all were after the cessation of iodine medication. The range was from 5.5 to 16.9 γ per hundred cubic centimeters. The average was 10.4 γ . The average corresponding basal metabolic rate of these patients was minus 4.

The behavior of the blood iodine, following administration of iodine to patients with toxic nodular goiter, is similar to its behavior in those with exophthalmic goiter. No essential difference has thus far been established. It remains irregularly high as long as iodine is administered. The height of this elevated level depends on how long previously iodine was given, since a large part of the administered iodine is rapidly excreted in the urine.

INDUCED HYPERTHYROIDISM

In patients who are being treated daily with unvarnished amounts of desiccated thyroid, the blood iodine is elevated. If excessive amounts are given over an extended period of time the blood iodine becomes as high as it is found to be in exophthalmic goiter. It falls to a normal level on the complete cessation of thyroid medication.

In one patient, who had been given elsewhere 10 grains (0.64 Gm.) of desiccated thyroid daily, over a period of six weeks, the blood iodine was 37.7 γ per hundred cubic centimeters. The characteristic symptoms of hyperthyroidism were present. The basal metabolic rate was elevated to plus 29. There was a marked increase in the urinary excretion of iodine. Thyroid medication was completely stopped at once. The blood iodine then fell to 15.8 γ per hundred cubic centimeters. The basal metabolic rate decreased to minus 4, and the urinary excretion of iodine fell to a low normal range.

Stopping the excessive medication of desiccated thyroid had, in this instance, the same effect as an adequate thyroidectomy. There was a striking correlation between the iodine metabolism of this patient and of one with toxic goiter. This we are inclined to regard as further evidence that the high blood iodine in toxic goiter is due to hypersecretion, and in this case to hypermedication, of the high iodine-containing thyroid hormone.

NONTOKIC GOITER

In patients with nontoxic goiter the blood iodine usually is within the normal range. It has been observed at the upper normal limit in certain patients with nontoxic diffuse colloid goiter. In patients with nontoxic nodular goiter it is at a low normal level. After thyroidectomy there is an immediate fall in the level of the blood iodine. After an extended period the blood iodine is found to be within the normal range.

Eighteen determinations made on ten patients with nontoxic nodular goiter revealed a range of from 6.3

to 12.7 γ per hundred cubic centimeters. The average was 10.4 γ . The average basal metabolic rate of these patients was minus 4. Their ages ranged from 11 to 60 years. The lowest values were found in those patients with nodular goiters of long standing, in which there were extensive cystic degeneration and other evidences of destruction of the secreting alveoli. The iodine content of the nodular goiter with such changes is very low.

The blood iodine is at a low level in patients with adolescent goiter. The presence of small nodules within these goiters appears to have no demonstrable relation to the level of the blood iodine. There is no apparent relation between the size of the goiter and the level of the blood iodine.

Six determinations of the blood iodine in patients with nontoxic nodular goiter after thyroidectomy revealed a range of from 9.7 to 12.7 and an average of 11.2 γ per hundred cubic centimeters. In these patients more of the thyroid was left behind than after a subtotal thyroidectomy, owing to the absence of toxicity. The basal metabolic rate of these patients averaged minus 6.

HYPOTHYROIDISM

The blood iodine is low in patients with hypothyroidism. This has been observed in patients with congenital cretinism, in those with diffuse juvenile goiter accompanied by a low basal metabolic rate and presenting symptomatic evidence of hypothyroidism and in patients with postoperative myxedema. Twelve determinations made on the blood of these patients revealed a range of from 7.2 to 11.0 γ per hundred cubic centimeters. The average of this series was 9.5 γ . This is 20 per cent lower than the normal average. The basal metabolic rate of this series ranged from minus 16 to minus 35, averaging minus 22. The lowering of the blood iodine in hypothyroidism is thus partial. There is presumably other iodine within the blood stream than that due to the actual thyroid secretion. In fact, Lunde has separated the blood iodine into an alcohol insoluble "organic" fraction and an alcohol-soluble "inorganic" fraction. We have not yet attempted to make this differential analysis.

Administration of desiccated thyroid, or of thyroxine, U. S. P., to these patients results in an immediate rise of the low level of blood iodine. On continued adequate administration the increased level is eventually stabilized at a high normal range. Nine determinations made on five patients receiving varying amounts of desiccated thyroid daily revealed a range of from 10.6 to 23.3 γ per hundred cubic centimeters. The average basal metabolic rate of these patients was minus 6. The highest value, 23.3, was obtained from a patient who had been given 4 grains (0.26 Gm.) of desiccated thyroid daily for five days. The lowest value, 10.6, was shown by a patient who had taken a quarter of a grain (0.016 Gm.) of desiccated thyroid daily for over a year. Both of these patients had previously developed myxedema following thyroidectomy.

FAMILIAL THYROID DISEASE

Members of the same family, living under similar conditions, may manifest varying pictures of thyroid disease accompanied by striking variations of the evidence of thyroid function. Investigation of the blood iodine of these persons reveals characteristic differences in the level of the blood iodine. Thus, in one family, the mother, aged 33, had a nodular goiter with an

elevated basal metabolic rate and the symptoms of hyperthyroidism. Her blood iodine was elevated, but fell to a normal level after thyroidectomy. The son, aged 12, with a diffuse juvenile goiter and the symptoms of hypothyroidism, had a basal metabolic rate of minus 18 and a low level of blood iodine. This was elevated by the administration of desiccated thyroid. The daughter, aged 11, also with diffuse goiter and hypothyroidism, revealed a basal metabolic rate of minus 16 and a blood iodine of 9.7 γ per hundred cubic centimeters. This was elevated to 33.8 γ after the administration of 3 grains (0.19 Gm.) of desiccated thyroid daily for two weeks. It was also elevated by the administration of iodine. Another son, aged 6 years, without evident goiter and with apparently normal thyroid function, revealed a normal blood iodine of 12.7 γ per hundred cubic centimeters. At specified intervals blood was drawn simultaneously from each of these persons during a visit to the clinic. The determinations of the blood iodine revealed characteristic variations depending on the nature of the thyroid disease and the treatment employed. The group thus served as controls, since they were living under similar conditions and taking the same diet. The environment of all was the same, hence the variations in the blood iodine were regarded as due to varying thyroid function or to the iodine in the medication.

OTHER THYROID CONDITIONS

It is recognized that patients with diffuse hyperplastic goiter and hyperthyroidism may develop exophthalmos subsequent to an adequate thyroidectomy. These patients are found to be metabolically normal. We have found the basal metabolic rate and blood iodine to be normal. Hence there has been found no direct evidence of residual hyperthyroidism.

In one of the patients investigated, the postoperative exophthalmos measured 19 mm. on the right side and 21 mm. on the left. The normal is 16. It was thus unequal. The basal metabolic rate averaged minus 5. The blood iodine averaged 9.6 γ per hundred cubic centimeters. There was a persistent lymphocytosis of 60 per cent. The development of postoperative exophthalmos thus appears to be due to other factors than the hyperthyroidism.

In patients with Riedel's struma the blood iodine is at a low normal range. We have not observed significant changes in patients presenting the so-called "Graves constitution."

OTHER DISEASES

The majority of hospital patients present a normal blood iodine. Among the diseases investigated are tuberculosis, chronic osteomyelitis, fractures and Hodgkin's disease. The blood iodine is normal in patients with cancer. There are, however, two striking exceptions. In acute severe infections, as in septicemia, the blood iodine is elevated. It is likewise elevated in lymphatic leukemia. In the latter disease there is also an elevated basal metabolic rate, a response to iodine and a lymphocytosis. There would appear to be some significance to the lymphocytosis since it occurs so frequently in thyroid disease.

URINARY IODINE

It would thus appear to be established that there is a definite relationship between the blood iodine niveau and thyroid function. Since the urinary excretion of

crystalloids is intimately related to their level in the blood, we have investigated the urinary excretion of iodine in patients with thyroid disease.

The normal excretion of urinary iodine in central Ohio is between 25 and 75 γ daily. It is increased in patients with toxic goiter. This increase is particularly noted in the early exacerbation of hyperthyroidism in patients with diffuse hyperplastic goiter. It is increased in patients with toxic nodular goiter. In patients with diffuse nontoxic colloid goiter it is normal. It is increased in patients with induced hyperthyroidism.

During the onset of menstruation there occurs a rise in the blood iodine. There is also an increased urinary excretion of iodine. This would further establish the overactivity of the thyroid during menstruation.

Daily medication with 30 drops of a mixture of inorganic and elemental iodine results in a tremendous increase in the urinary excretion of iodine. It would seem that this is an unnecessarily large amount to administer, since so great a proportion is excreted in the urine.

Following the daily administration of 10 mg. of iodine, in the preparation of patients with exophthalmic goiter for thyroidectomy, there ensues an increasing urinary excretion of iodine. This is presumably due to the early replacement of iodine in the depleted thyroid gland and tissues.

SUMMARY

The iodine content of human blood is thus a measure of thyroid function. Demonstrable changes in the level of the blood iodine accompany those diseases in which thyroid function is altered. The fluctuation of the blood iodine during the course of thyroid disease under management is significant. The blood iodine is increased in thyroid hyperfunction. It is lowered in thyroid hypofunction. It is always elevated by any form of iodine medication. It would seem that the level of the blood iodine is controlled by thyroid activity. There are corresponding changes in the urinary excretion of iodine. This increases in thyroid hyperfunction. It likewise is increased on any form of iodine medication.

Simultaneous investigation of the basal metabolic rate, the level of the blood iodine and the urinary excretion of iodine reveals significant evidence of thyroid activity. The significance of the blood iodine in thyroid disease is similar to that of the blood sugar in diabetes mellitus and to that of the blood calcium in parathyroid disease.

ABSTRACT OF DISCUSSION

DR. WILLARD O. THOMPSON, Chicago: These observations are important because they are quantitative. The concentration of iodine in the blood may vary greatly with the intake of iodine. The significance of these observations lies largely in the fact that they were made during a period of minimum iodine intake. It is of interest that their normal value of 0.012 mg. per hundred cubic centimeters is about the same as that found by three other observers in different parts of Europe and approximately the same as that observed in ox blood by Kendall. I would call attention to how well their observations in thyroid disease are correlated with changes in the basal metabolism. Changes in the excretion of iodine in the urine parallel changes in the concentration of iodine in the blood. The recent observations of Dr. Lundy of Oslo are in accord with those of the authors. Dr. Lundy tried to separate the iodine of the blood into its organic and inorganic components and reported that the organic fraction was high in exophthalmic goiter before treatment and dropped in associa-

tion with the metabolism during the administration of iodine and following a subtotal thyroidectomy. Because of data thus far accumulated, it seems difficult to escape the conclusion that in exophthalmic goiter there is an overproduction of thyroxine or some thyroxine-like substance by the thyroid and that this substance does not appear to be deficient in iodine. It would be of interest to know whether there is a parallelism between the height of the basal metabolism and the concentration of iodine in the blood in exophthalmic goiter. The total blood iodine in exophthalmic goiter was about 0.028 mg. per hundred cubic centimeters on the average, or about two and one-third times the normal. The basal metabolism in this condition is about plus 50 per cent on the average with the patients at rest in bed. In myxedema about 0.35 mg. of thyroxine must be injected intravenously every day in order to hold the basal metabolism at the standard normal level. If the figures in exophthalmic goiter bear any relation to the rate of formation of thyroxine, it is being formed at the rate of about 0.77 mg. a day on the average. Dr. Plummer found that the daily administration of 1 mg. of thyroxine in patients with no functioning thyroid tissue resulted in the basal metabolism being held at a level from 20 to 50 per cent above the normal. These figures of from 0.7 to 1 mg. of thyroxine are of interest because they are correlated with my observation that the minimum amount of iodine that must be administered to produce a maximum reduction in basal metabolism in exophthalmic goiter is about 6 mg. a day.

DR. R. J. TURNER, Detroit: This report has clearly shown the relationship between thyroid disease and blood iodine concentration. Most interesting are the studies on the blood iodine concentration after thyroidectomy. The fall over the high preoperative iodine value shows the regulating effect of the thyroid gland on the concentration of iodine in the blood. There is a question as to whether this increase in iodine due to overactivity of the gland is sensitive enough to detect slight changes in the vegetative nervous system. My studies on hyperthyroid cases showed about 66 per cent with an increase over the normal iodine concentration, about 33 per cent being normal. Possibly the estimation of iodine in the organic and inorganic form separately might show a closer relationship in regard to the small changes in the iodine concentration.

DR. GEORGE M. CURTIS, Columbus, Ohio: I appreciate greatly the discussion that has been given this problem. These blood and urine iodine determinations have been done entirely by my associates, Dr. Chester Davis, Dr. Versa Cole and Mr. Francis Phillips. We have added further evidence that exophthalmic goiter is a hyperthyroidism. Not only is the blood iodine high, but it falls to a low, normal level following adequate thyroidectomy. It does not fall to a low, normal level between the stages of a two-stage lobectomy or after an inadequate thyroidectomy. We have recently discovered that the urinary excretion of iodine is increased during the early exacerbation of hyperthyroidism in patients with exophthalmic goiter. This is correlated with the known fact that the thyroid gland in exophthalmic goiter contains a low quantity of iodine. It may be that this iodine loss by the gland is also participated in by the tissues. That will remain for further investigation. There is a variation in the concentration of the iodine content of the blood. This, so far as we are able to determine, is not directly correlated with the basal metabolic rate. Any form of iodine medication raises the level of the blood iodine. Administration of iodized oil in any form raises enormously the iodine content of the blood. Iodine is absorbed rapidly after such administration. We have to be extremely careful that our patients are not being medicated with iodine in any form. Those patients uniformly have elevation of the urinary excretion of iodine and of the blood iodine. When 10 mg. of iodine is given daily to patients with exophthalmic goiter, at first the urinary excretion is low. Presumably the iodine is going into the depleted gland and tissues. Later when those thyroids are examined, they have a much higher iodine content than they did previous to the administration of iodine. This is correlated with the increased activity of the thyroid cells in the formation and storage of colloid. The significance of the iodine content of the blood in thyroid disease is essentially the same as the significance of the sugar content of the blood in diseases of the islands of Langerhans, and of the calcium content of the blood in diseases of the parathyroid glands.

SPONTANEOUS DISLOCATION OF THE LACRIMAL GLANDS

REVIEW OF THE LITERATURE, REPORT OF A CASE, AND TECHNIC OF SURGICAL CORRECTION

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NEW YORK

Displacement of the lacrimal gland occurs with greater frequency than can be inferred from modern textbooks on ophthalmology. In 1903, Roy¹ presented a case of spontaneous prolapse of the lacrimal gland. Wadsworth² stated that he had "seen a considerable number of cases of prolapse, none traumatic, and only one inflammatory. One case was bilateral in a middle-aged man and had been present since childhood." Jackson³ cited two cases of spontaneous prolapse and stated that the condition was more common than the literature indicated. Since Roy's presentation only two references have been made to dislocation in this country, by Tyson⁴ in 1911 and by Curtin⁵ in 1915.

In 1895, the Russian ophthalmologist Golovin⁶ made the first report on bilateral displacement of the lacrimal gland and assigned to the disease the name "dislocatio glandulae lacrymalis spontanea sive glandula lacrymalis mobilis." He considered this condition as a separate disease entity and one to be differentiated from blepharochalasis and ptosis adiposa. His views received no acceptance in this country, although in Europe considerable discussion appeared regarding this condition. In 1930, Golovin⁷ stated that he had seen at least fifteen cases of spontaneous dislocation. Fuchs⁸ believed that relaxation of the skin of the upper lids in young patients occurs in only two conditions, ptosis adiposa (without, however, accumulation of fat) and blepharochalasis. He did not make any mention of dislocation of the lacrimal gland as an accompaniment or a complication of either of these diseases. Ruszkowski⁹ and Avizonis¹⁰ believe that dislocation of the lacrimal gland is a primary manifestation in the pathogenesis of blepharochalasis. Scrinì,¹¹ Weinstein,¹² Velikanov¹³

From the Department of Ophthalmology, New York Post-Graduate Medical School of Columbia University, Dr. Martin Cohen, Director.

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1. Roy, Dunbar: Spontaneous Prolapse of Lacrimal Glands, *Tr. Am. Ophth. Soc.* 10: 182, 1903.

2. Wadsworth, O. F., in discussion on Roy.¹

3. Jackson, E.: *Abst., Ophth. Year Book* 7: 171, 1905.

4. Tyson, H. H.: Dislocation of Lacrimal Glands Associated with Basedow's Disease, *Arch. Ophth.* 42: 511, 1913.

5. Curtin, T. H.: Dislocation of Lacrimal Glands, *Arch. Ophth.* 44: 553, 1915.

6. Golovin, S. S.: Spontaneous Prolapse of Lacrimal Glands, *Clin. Maitop., Moscow* 5: 930, 1895; Displacement of Lacrimal Glands, *Arch. d'ophth.* 16: 104, 1896.

7. Golovin, S. S.: quoted by Avizonis.¹⁰

8. Fuchs, Ernst: Ueber Blepharochalasis (Erschlaffung der Lidhaut), *Wien. klin. Wchnschr.* 7: 109, 1896.

9. Ruszkowski, J.: quoted by Avizonis.¹⁰

10. Avizonis, P.: Ueber spontane Senkung der orbitalen, Tränenrüse, *Ztschr. f. Augenh.* 77: 167 (May) 1932.

11. Scrinì: Des glandes lacrymales orbitaires mobiles, *Arch. d'ophth.* 25: 592, 1905.

12. Weinstein, A.: Ueber zwei eigenartige formen des Herabhängens der Haut der Oberlider: Ptosis atrophica und Ptosis adiposa. Ein Fall von Ptosis adiposa mit spontaner Senkung der Tränenrüse, *Klin. Monatsbl. f. Augenh.* 47: 190, 1909.

13. The Russian literature on dislocation of the lacrimal gland:

Donin, I. C.: *Russk. j. oftal.* 12: 376, 1930.

Bursuk, G. G.: *Russk. j. oftal.* 11: 831, 1930.

Lotin, A. A.: *Russk. j. oftal.* 11: 831, 1930.

Solovgov, L. K.: *Russk. j. oftal.* 11: 831, 1930.

Sceglova, A.: *Russk. arch. f. ophth.* 7: 914, 1930.

Tokareva: *Russk. j. oftal.* 9: 373, 1929.

Hecker, J.: *Dnjepronetrovskij med.* 7: 57, 1928.

Mursin, A. N.: *Russk. j. oftal.* 6: 1192, 1927.

Krassovskaja, K. M.: *Russk. j. oftal.* 6: 411, 1927.

Snegirev, K. W.: *Russk. j. oftal.* 6: 312, 1927.

Strachov, W. P.: *Russk. j. oftal.* 6: 312, 1927.

Sapir, J. M.: *Russk. j. oftal.* 5: 76, 1926.

Judin, K. A.: *Vestnik oftalmol.* 28: 943, 1911.

Filatov, W. P.: *Vestnik oftalmol.* 26: 343, 1909.

Velikanov, A. N.: *Vestnik oftalmol.* 26: 120, 1909.

Averbach, M. O.: *Vestnik oftalmol.*, July-Oct., 1902.

and Löhlein¹⁴ contend that dislocation occurs frequently and would be discovered more often by careful examination. Elschmig and Stock¹⁵ do not view dislocation of the lacrimal gland as a separate entity and consider that it is merely a secondary development of blepharochalasis. The Russian school has adhered to Golovin's dictum, and seventeen cases of uncomplicated dislocation of the lacrimal glands appear in Russian journals, most of which have been reported during the past six years.¹⁸ In the literature on blepharochalasis and ptosis adiposa, many examples of dislocation of the lacrimal gland are noted as a coincidental finding (Loeser,¹⁶ Weinstein,¹² Weidler,¹⁷ Weidemann,¹⁸ Cronstedt¹⁹). From the reports and photographs accompanying them, dislocation of the lacrimal gland suggests itself as the primary diagnosis producing changes in the tissue of the upper lid on which the diagnosis of blepharochalasis and ptosis adiposa was based. Van Heuven²⁰ reported a case of dermoid of the lid and another of lipodermoid, in both of which operations were performed and in which pathologic examination revealed normal lacrimal glands. His postoperative diagnosis was dislocation of

forty-three cases which he had personally observed in 1932.¹⁰ The lacrimal glands were readily palpable in his series as movable tumors beneath the skin of the lid. He is very enthusiastic about the frequency with which dislocation occurs, and there is a possibility that some of his cases did not fall entirely within the scope of this classification. Further difficulty in separating these three diseases is caused by the lack of uniformity of nomenclature. The following terms are encountered in considering displacement of the lacrimal gland: ptosis,



Fig. 1.—Spontaneous dislocation of the lacrimal glands.

the lacrimal gland. Avizonis, director of the ophthalmic clinic at the University of Kovno, Lithuania, reported twenty cases of dislocation in 1929²¹ and a total of



Fig. 2.—Dislocation of the left lacrimal gland (conjunctival aspect).

hypertrophy (Shoemaker,²² Lambert,²³ Argyll Robertson²⁴), prolapse (Noyes²⁵), luxation, dacryo-adenop-tosis, movable lacrimal gland, dislocation (Snell,²⁶ Cronstedt²⁷) and displacement (Cholous,²⁸ Mazet,²⁹ Syme,³⁰ Terrien³¹).

Spontaneous dislocation is observed chiefly in young patients, in whom it is usually present since early childhood. In a small proportion of cases it is congenital. In 85 per cent of cases reported the dislocation was bilateral and the incidence in males and females about equal. Factors to be considered in its production are congenital weakness of supporting structures of the gland (Holmes,³² Jones,³³ Genet³⁴), anatomic differences in the structure of the orbit, heredity (Löhlein,¹³ in a father and daughter; Lafon and Villemonte,³⁵

14. Löhlein, W.: Hereditary Dislocation of Lacrimal Gland, *Wehnschr. f. therap. Hyg. d. Auges.* 22:157, 1919.

15. Stock, W.: Die Pathologie der Tränenorgane, in Graefe-Saemisch: *Handbuch der gesamten Augenheilkunde*, Leipzig, Wilhelm Engleemann, 1925.

16. Loeser, L.: Ueber Blepharochalasis und ihre Beziehung zu verwandten Krankheitsbildern nebst Mitteilung eines Falles von Blepharochalasis mit Spontan-Luxation der Tränenrüse, *Arch. f. Augenh.* 61: 252, 1908.

17. Weidler, W. B.: Blepharochalasis, *Tr. Sect. Ophth., A. M. A.*, 1913, p. 339.

18. Weidemann, M.: Ein Beitrag zur Kenntnis der Ptosis adiposa nebst Mitteilung eines Falles mit spontaner Senkung der Tränenrüse, *Dissert. Königsberg*, 1911.

19. Cronstedt, L.: Ptosis Atonica or Blepharochalasis with Bilateral Dislocation of the Lacrimal Glands, *Acta ophth.* 4:177, 1927.

20. Van Heuven, J. A.: Dislocation of Lacrimal Gland, *Nederl. tijdschr. v. geneesk.* 2:3566 (July 21) 1928.

21. Avizonis, P.: Dislocatio Glandulae lacrymalis spontanea, *Russk. j. oftal.* 10:423, 1929.

22. Shoemaker, W. T.: A Case of Bilateral Enlargement of the Lacrimal Glands, *Ann. Ophth.* 13:513, 1904.

23. Lambert: Hypertrophy of Lacrimal Glands, *Tr. Am. Ophth. Soc.*, 9:403, 1900-1902.

24. Argyll Robertson, Douglas: A Case of Enlargement and Displacement of the Lacrimal Gland into the Upper Eyelid, *Tr. Med.-Chir. Soc. Edinburgh* 6:224, 1887.

25. Noyes, H. D.: Spontaneous Prolapse of the Lacrimal Gland: Its Extirpation, *Tr. Am. Ophth. Soc.*, 4:494, 1887.

26. Snell, S.: A Case of Dislocation of the Lacrimal Gland, *Ophth. Rev.* 1:207, 1881-1882.

27. Cronstedt, L.: Bilateral Dislocation of the Lacrimal Glands, *Uppsala läkaref. förh.* 32:15 (Feb.) 1927.

28. Cholous, B.: Etudes sur les déplacements de la glande lacrymale orbitaire, *Thèse de Paris*, 1898.

29. Mazet: Sur un cas de . . . ou ptose de la glande lacrymale, *Bull. et mém.* 22, 1904.

30. Syme, W. G.: A Case of . . . of the Lacrimal Gland, *Edinburgh M. J.* 33:31, 1907.

31. Terrien, F.: Hypertrophie et déplacement de la gland lacrymale, *Bull. Soc. d'ophth. de Paris* 14:119, 1901.

32. Holmes, C. R.: Extirpation of the Lacrimal Sacs and the Lacrimal Glands, *Arch. Ophth.* 28:1, 1899.

33. Jones, L. W.: Congenital Dislocation of the Lacrimal Gland, *Ophthalmology* 7:17, 1911.

34. Genet, M. L.: Ectopie des deux glandes lacrymales orbitaires. Ablation des deux glandes, *Ann. d'ocul.* 168:670, 1931.

35. Lafon, C., and Villemonte, M.: Hereditary Blepharochalasis with Luxation of Lacrimal Gland, *Arch. d'ophth.* 26:243, 1906.

through four generations; Avizonis,³⁶ in a mother and son and in a father and daughter); antecedent inflammations in the gland (Duhamel,³⁶ after tear gas poisoning; Pritchard,³⁷ after excessive weeping, and Golovin,⁶ after mumps), and, finally, lack of lid support from rapid absorption of orbital fat (Tyson,⁴ loss of 38 pounds [17.2 Kg.] in two months in exophthalmic goiter). Ascher³⁸ reports on the syndrome of blepharochalasis, goiter and double lip. In ten cases typical double lip was found in seven, thick upper lips in two, without, however, duplicature of the mucous membrane. Avizonis found double lip in two of his cases.

The diagnosis is made by the presence of a pouch of elongated skin of the lid, which usually covers the cilia in the lateral half. No inflammatory reaction is present in the skin. A mass resembling an almond in size and shape is easily palpated below the lacrimal fossa. When an attempt is made to grasp this mass between the examining fingers, it slips quickly back into the orbit. The gland may be either partially or completely dislocated from its normal anatomic situation, and the



Fig. 3.—Final result. Photograph taken after excision of excessive skin from the left upper lid.

extent of the thinning and overfolding of the skin of the lid is dependent on the extent of the prolapse and the duration of the disease. In complete dislocation the palpebral lobe of the lacrimal gland can be seen lying on the eyeball if the lid is elevated and the patient's gaze directed nasally and inferiorly.

A knowledge of the anatomy of the gland is necessary in the consideration of the disease and its diagnosis. It lies deep beneath the lateral part of the upper

eyelid covered in front by the septum orbitale (tarso-orbital fascia), orbicularis oculi muscle, and skin, and is placed just within the orbital margin, wedged in between the lateral angular process of the frontal bone and the globe; the bone is slightly hollowed out for its reception, so forming the fossa glandulae lacrimalis. In the lower and forepart of which it mainly lies; posteriorly, the gland is adherent to a mass of orbital fat which fills the hind part of the fossa (*loge accessoire*—Duvigneaud). The gland extends downward as low as



Fig. 4.—Conjunctival view two months after successful replacement operation.

the zygomaticofrontal suture. According to Whitnall,³⁹ the ligaments which have been described as keeping the gland in position have no special degree of development, and he believes that the application of the term "ligament" is pretentious and misleading. The gland is kept in position between the globe and frontal bone, not by any such ligaments, but by being folded around the lateral horn of the aponeurosis of the levator, which lies in front of it, and by the support afforded to it by the mass of orbital fat behind. The gland is crossed in front and deeply grooved by the lateral horn of the aponeurosis of the levator palpebrae superioris muscle, round which it is folded; so deep is the groove that the gland is almost divided into two parts or lobes, superior (orbital) and inferior (palpebral). Whitnall has seen no instance of entire separation of the two parts of the gland and considers the term "lobe" preferable to the designation of superior and inferior lacrimal glands seen in many textbooks.

Ptosis adiposa, according to Fuchs,⁴⁰ "is the name applied to relaxation of the skin of the lid which occurs in younger people and develops because the protective fold of the upper lid is of unusual size so that it hangs down over the free border of the lid into the region of

36. Duhamel, A.: Un cas de luxation spontanée des glandes lacrymales orbitaires; procédé de fixation dans la fossette lacrymale du frontal, *Ann. d'ocul.* 155: 341, 1918.

37. Pritchard, E. L.: Non-traumatic Dislocation of Lacrimal Gland, *Tr. Ophth. Soc. U. Kingdom* 26: 139, 1906.

38. Ascher, K. W.: Blepharochalasis mit Struma und Schleimhaut-duplikatur der Oberlippe, *Klin. Monatsbl. f. Augenh.* 65: 86, 1919.

39. Whitnall, S. E.: *Anatomy of the Human Orbit*, London, Henry Frowde & Hodder & Stoughton, 1921.

40. Fuchs, Ernst: *Diseases of the Eye*, ed. 10, Philadelphia, J. B. Lippincott Company, 1933.

the palpebral fissure. The name was applied because it was earlier thought that this enlargement was due to an excessive accumulation of fat in the protective fold. The true cause is that the trains of fascia which unite the skin with the tendon of the levator and with the upper margin of the tarsus are not taut enough. As a result, the skin is not properly drawn up in the elevation of the lids but hangs down as a loose pouch.

"In blepharochalasis the skin of the upper lid has become so thin that it lies in innumerable folds and looks like crumpled tissue paper. It acquires a reddish appearance through the widening of numerous small superficial veins. As a result of its relaxation and loose structure it hangs down, pouch-like; the border of the lid does not itself lie lower."

The usual treatment advocated for dislocation of the lacrimal gland with its resulting cosmetic deformity due to the lid folds produced is to excise the gland (de Schweinitz⁴¹). The removal of the lacrimal gland is a dangerous procedure which may be complicated by profuse hemorrhage, and a large hematoma of the orbit may develop and even cause atrophy of the optic nerve (Gifford⁴² and Curtin⁴³). Golovin in his first case reported that he removed the right lacrimal gland and excessive skin fold. On the left side part of the gland was removed, and an attempt was made to replace the remainder in the fossa, a loop of silk suture being passed through the gland and brought out at the upper edge of the orbit. Golovin also removed the excess of elongated tarso-orbital fascia and cut off the excessive skin. Most of the Russian ophthalmologists extirpate the dislocated gland, although Sapir¹³ performed Golovin's suture replacement operation on both sides. Duhamel³⁶ removed the left gland and attempted an elaborate replacement operation on the right side, passing the sutures through the gland and through two holes which had been made in the bony wall of the orbit. No detailed description of the technic of replacement has appeared in the American literature.

REPORT OF CASE

History.—John T., aged 21, referred by Dr. Shirley Sprague, first examined on Feb. 4, 1929, gave a history of recurrent drooping of the upper eyelid ever since an attack of whooping cough at the age of 8. Following acute rhinitis, the left eyelid became reddened and painful, the palpebral fissure became narrow and a purulent secretion exuded from the inflamed left conjunctiva. The last inflammatory attack occurred in March, 1928, following a laceration of the left upper lid and left side of the nose.

Examination.—At the first visit there was a corrected visual acuity of 20/20 in each eye. When the upper lids were compared, the right showed an overlapping fold of skin which did not encroach on the palpebral fissure, while the left showed a fold of skin large enough to cover the palpebral fissure everywhere, except nasally, producing an apparent narrowing thereof (fig. 1). The skin of each upper lid was of normal color and wrinkled, as in ptosis adiposa. Raising of the eyelids readily exposed the palpebral lobe of the right lacrimal gland and the palpebral and orbital lobes of the left lacrimal gland (fig. 2). The left lacrimal gland could easily be palpated through the redundant skin.

The urinalysis, the blood chemistry, the Wassermann reaction in the blood, the differential blood count and the basal metabolism were normal. There was a marked hypertrophy of the labial mucous membranes and of the submucous tissue of the mouth, from lips to gingivae. The roentgenogram showed an

absence of frontal sinuses, and shallow orbital roofs, even more shallow than is usually found with absent frontal sinuses.

On February 21, the left upper lid became acutely inflamed, and the patient had considerable pain over the region of the left lacrimal gland. The tissues of the lid were swollen and tense, closing the temporal half of the palpebral fissure, and there was chemosis of the bulbar conjunctiva temporally and superiorly. Both lobes of the lacrimal gland were tender on palpation, and greenish-yellow pus exuded from the gland at the junction of the two lobes. After the application of hot compresses, 3 cc. of pus was easily expressed from the gland, after which the patient had relief from all symptoms within forty-eight hours. Weekly smears from the conjunctival sac, taken for one month after this attack, yielded neither pus cells nor bacteria.

The diagnosis of this case by Dr. Arnold Knapp was blepharochalasis with prolapse of the left orbital gland. He recommended that a roentgenogram of the left orbit be taken for possible malformation.

Dr. Martin Cohen's diagnosis was congenital dislocation of the accessory lacrimal glands and that the local lesion followed hypertrophy of the lacrimal gland on the left side.

Dr. Walter B. Weidler considered this case prolapse of the lacrimal glands especially marked on the left side and recommended extirpation with removal of the excessive tissue in the lids. In his opinion the drooping of the eyelid did not extend across the entire width of the border of the lid as seen in blepharochalasis, and there were no degenerative changes in the skin as noted in his series of cases of blepharochalasis.

The following operations, performed with the assistance of Dr. Martin Cohen, produced the satisfactory result seen in figure 3.

Technic.—The patient was admitted to the Post-Graduate Hospital on June 13, 1929, for operation on the left gland, general anesthesia being used. A skin incision was made 3 mm. below the eyebrow line in the outer third of the upper eyelid to avoid the levator palpebrae superioris muscle, and extended in a curved direction temporally and inferiorly toward the outer canthus. The edges of the skin were freed and the tarso-orbital fascia (septum orbitale) exposed by guarded dissection. When this fascia was split transversely, the orbital lobe of the lacrimal gland was exposed and found to be situated about 4 mm. inferior to the lacrimal fossa. The palpebral lobe of the gland was next exposed by extending the incision in the fascia temporally. Only the temporal portion of the palpebral lobe was freed, as dissection at the nasal edge would have damaged some fibers of the levator sheath. Exposure of the lacrimal gland inferiorly was easily effected, excepting at one portion contiguous with the fornix conjunctivae. (At this stage of the operation the gland was examined and found to be uniformly hypertrophied and measured about 15 mm. transversely at the upper level of the orbital lobe and 10 mm. in the anteroposterior diameter. The vertical measurement from the superior level of the orbital lobe to the conjunctival aspect of the palpebral lobe was about 20 mm.). In an attempt to free the inferior aspect of the palpebral lobe, a buttonhole was made into the conjunctiva and further dissection in this direction was discontinued. The prolapse of the palpebral lobe of the gland appeared more marked than the prolapse of the orbital lobe.

The orbital lobe could be replaced into the lacrimal fossa by traction exerted on the palpebral lobe superiorly and temporally. Two double-armed silk sutures were then passed through the posterior inferior surface of the palpebral lobe, one directed superiorly and the second superiorly and laterally beneath the tarso-orbital fascia and the periosteum of the frontal bone. These sutures were brought out through skin above the eyebrow and tied over small cotton balls, the object of this procedure being to permit further tightening of the sutures postoperatively if the dislocation had not been fully corrected. The operative wound was then flushed with warm solution of corrosive mercuric chloride, 1:5,000. A chromic catgut suture was passed through the inferior edge of the incision in the tarso-orbital fascia. The superior edge of the fascia was next included, and the suture was passed over the lacrimal fossa and through the periosteum of the frontal

41. de Schweinitz, George: *Diseases of the Eye*, ed. 9, Philadelphia, W. B. Saunders Company, 1921.

42. Gifford, H.: *Extirpation of the Lacrimal Gland Causing Atrophy of Optic Nerve*, Am. J. Ophth., 6: 268, 1889.

43. Curtin, T. H.: Personal communication to author.

bone. A second catgut suture closely approximated the edges of the fascia nasally. The object of these sutures was to reinforce the support of the displaced gland and to repair the rent in the tarso-orbital fascia. The skin incision was closed by three interrupted silk sutures. The edges of the skin were iodinated and a firm monocular bandage applied.

Apart from extensive subconjunctival hemorrhage and traumatic edema of the lid, there were no postoperative complications, and on first inspection of the conjunctival fornix three days postoperatively the palpebral lobe of the lacrimal gland could no longer be seen. On the fifth day the skin sutures were removed. The superolateral double-armed silk suture which was passed from the lacrimal gland beneath the periosteum of the frontal bone was removed on the ninth day. On July 3, the cotton ball beneath the second double-armed suture was removed and there was no retraction of the excessive silk suture to indicate that the lacrimal gland could now prolapse. On July 6 (twenty-six days postoperatively) the suture had sunk to the level of the eyebrow and was removed as no gland was to be seen in the fornix conjunctivae. The object of the operation was merely to attempt replacement of the lacrimal gland into its normal fossa. No attempt was made to relieve the sagging loose skin tissue of the upper lid. Several months after the successful replacement of the lacrimal gland, considerable retraction of the loose areolar tissue was noted, the palpebral fissure became wider, the pupillary area of the cornea was no longer encroached on by the overhanging folds of skin and the cilia of the upper lid, which were entirely covered preoperatively, were easily seen (fig. 4). It was apparent, however, that the excessive lid tissue would have to be removed to achieve a better cosmetic result.

An interesting observation on the part of the patient was that his subsequent attacks of acute rhinitis were not complicated by left-sided dacryo-adenitis. The exposed position of the prolapsed palpebral lobe in the conjunctival fornix probably accounted for the repeated inflammations due to infection ascending from the nose.

The right gland was operated on, Oct. 10, 1929, by the same technic, local anesthesia being used. Several points of difference are worthy of consideration. The skin incision measured 16 mm. and was placed 5 mm. below the eyebrow. On exposure of the tarso-orbital fascia only a minimal amount of hemorrhage was noted as compared with the bleeding encountered on the left side. The conjunctival aspect of the palpebral lobe was exposed with great difficulty, as this lobe of the gland appeared more adherent to the surrounding tissue than the left palpebral lobe. The orbital lobe measured 14 mm. in the transverse diameter and 10 mm. in the anterior posterior diameter. Whereas a double-armed suture passed from the posterior inferior aspect of the palpebral lobe on the left side readily replaced the orbital gland into the lacrimal fossa, a similar maneuver on the right side only produced eversion of the orbital lobe, causing it to be displaced farther from its normal anatomic situation. A double-armed silk suture was passed through the medial third of the anterior aspect of the orbital lobe and continued superiorly and temporally over the lacrimal fossa and beneath the periosteum of the frontal bone and brought out just above the eyebrow. A second double-armed suture, including the outer third of the anterior aspect, was passed in a similar manner.

On April 29, 1930, the excessive skin of the left upper lid was removed, procaine hydrochloride infiltration anesthesia being used. The patient was operated on in the sitting posture in order the better to gauge the degree of drooping. The wound was closed with eleven interrupted silk sutures.

Pathologic Report (Dr. Louise H. Mecker).—The tissue from the eyelid was examined. The specimen measured 30 by 14 by 2 mm. and was composed of thin wrinkled skin without special markings.

Microscopic examination of the sections showed a covering of dermal epithelium, typical of the eyelid. This rested on edematous fibrous tissue that contained many dilated blood vessels. There were extravasations of blood outside the blood vessels. The sebaceous glands related to the epithelium were of unusually large size. There was a mild inflammatory reac-

tion as evidenced by collections of lymphocytes and plasma cells around the blood vessels and sebaceous gland ducts.

Diagnosis of chronic inflammation with passive congestion and edema was made.

SUMMARY

1. Spontaneous dislocation of the lacrimal glands is a separate disease entity and is often erroneously considered as a complication of blepharochalasis and occasionally with ptosis adiposa.

2. The disease is seen commonly in Russian patients and is probably of more frequent occurrence in this country than indicated in American textbooks and literature.

3. Extirpation of dislocated lacrimal glands is a hazardous operation which should be replaced by the safer and simpler procedure of returning the gland into the lacrimal fossa.

4. If performed early in life, the operation would prevent the formation of overhanging folds of skin in the upper lids.

1016 Fifth Avenue.

ABSTRACT OF DISCUSSION

DR. F. HERBERT HAESSLER, Milwaukee: It does not take an extensive search of the literature to discover that the confusion concerning the names of clinical entities and nosologic complexes is tremendous. When the contents of the literature are boiled down, it is seen that three tissues are involved in the discussion—the skin of the lid, the orbital fascia and the orbital contents. The points of difference concern chiefly the tissue in which the lesion has its origin. Some assume that the tear glands themselves become less firmly anchored, which weakens the orbital fascia and stretches the skin. Any number of combinations are possible, and most authors have evolved a theory of their own on the basis of one or two cases. If I understand, Dr. Smith assumes that in his cases the seat of the lesion was probably the palpebral-orbital fascia, which allowed the gland to prolapse, with secondary changes in the gland and in the skin. This assumption is somewhat comparable to what happens in inguinal hernia. There also are some holding structures, which finally give way under pressure from within. I do not think one has to assume mystical relation between skin and fascia and orbital contents, when a familiar mechanism can completely explain the condition. Dr. Smith's operation seems to be successful; at least the pictures showed that he had accomplished what he had attempted. He assures me that operation is not very difficult to perform, so that even allowing for modesty on his part, I think we should all try it. The fact that extirpation of the tear gland is a dangerous procedure has not been sufficiently emphasized in the literature.

DR. EDWARD JACKSON, Denver: The term applied to the condition is often of doubtful propriety. The cases that I have seen have all been mislocation or anomalies of location in the gland. The orbital gland was not in the orbit but partly in the lid, entirely independent of enlargement. The condition was a developmental anomaly. I watched my patient carefully for twenty years. Two of his sisters exhibited a lesser degree of the same condition. In none of my cases were there any symptoms that brought the patient to seek relief. They were conditions noticed when the eyes were examined for other reasons. It has never occurred to me to do anything for any of these patients. I have certainly seen five, and probably more, cases that should be put in this class. I have seen traumatic dislocation of the glands and have seen enlargement of the palpebral portion, which I have removed; but in those cases the palpebral gland was entirely separate from the orbital gland.

DR. VERNON A. CHAPMAN, Milwaukee: I wish to call attention to a cause of confusion arising in describing certain lacrimal cases. This confusion is caused by the use of the term "lacrimal fossa." Unfortunately, there are two separate fossae to each of which the term "lacrimal fossa" is applied. These fossae are the fossa glandulae lachrymalis and the fossa sacci lachrymalis, the fossa of the lacrimal gland and the fossa of the lacrimal sac, in obviously two quite different anatomic

locations. As the lacrimal gland does not begin the function of secretion of tears before the second to seventh week after birth, and the infant's eyes get along very well without it, there is reason to believe that compensation for its loss later in life may be established without great danger to the eyes. If operation for replacement is to be done, prolapse of the lacrimal gland should be differentiated particularly from dacryops, or cyst of the lacrimal gland, and from tumors, which may range in size from that of a pea to a pigeon's egg and are usually not inflammatory in character.

DR. JAMES W. SMITH, New York: I was interested in Dr. Jackson's statement that he had seen two patients in the same family who exhibited a tendency toward lacrimal gland dislocation. The prominent orbital roofs evident in my patient were also present in his father and his paternal aunt, both of whom were operated on by me for glaucoma. I was informed that prominent orbital roofs were also present in the patient's paternal grandfather. Many cases of lacrimal gland dislocation are discovered accidentally in routine clinical examinations of patients who come for treatment of other eye conditions. My patient's chief complaint was repeated attacks of left-sided dacryo-adenitis rather than the cosmetic deformity produced by the overhanging skin folds of the eyelids. Dr. Chapman's point emphasizes the necessity of accurate preoperative diagnosis. In my paper I mentioned the two cases of Van Heuven in which a dermoid cyst and a lipodermoid growth were removed but which on pathologic examination were found to be dislocated lacrimal glands.

CHOLECYSTITIS

STUDY BASED ON FOLLOW-UP AFTER FROM FIVE TO
FIFTEEN YEARS OF TWO HUNDRED PATIENTS
NOT OPERATED ON

J. M. BLACKFORD, M.D.

ROBERT L. KING, M.D.

AND

K. K. SHERWOOD, M.D.

SEATTLE

Disease of the gallbladder is diagnosed in our clinic more often than any other chronic intra-abdominal lesion. Twelve years ago we¹ reported that gallbladder disease was found twice as frequently as peptic ulcer and gastric cancer combined and that it was the most common organic cause of dyspepsia. Nearly 6 per cent of all our patients over 20 years of age are diagnosed as having gallbladder disease. Yet pathologic studies show that ten times this percentage, or 60 per cent of adults, show cholecystopathies at routine autopsies.

CHOLECYSTOPATHY AT AUTOPSY

Autopsies recently performed (table 1) to study the gallbladder carefully have shown that cholecystitis and cholesterosis are the most common cholecystopathies, with stones frequently present. Stewart² of Leeds reports a 16.4 per cent incidence of gallstones in 6,000 autopsies. Crump,³ recently working in Vienna, reports a 32.5 per cent incidence of gallstones and 60 per cent incidence of cholecystopathy in 1,000 routine autopsies. Mentzer⁴ reports 21.6 per cent of gallstones and a 66 per cent incidence of cholecystopathy in 612 routine autopsies. Crump³ reports the presence of stones in the bile ducts of one fourth of all cases presenting gall-

stones. Mentzer⁴ states that only 15 per cent of his cholecystopathies found at necropsy had given clinical evidence of gallbladder disease.

Routine autopsies (table 2) show that, in each decade past the age of 30, cholecystopathy is present in more than half of all subjects, and gallstones are present in more than one fifth. With these facts we must believe that more than half of adults past 30 years of age have abnormal gallbladders and that approximately one fifth have gallstones. One fifth of this audience must have gallstones, yet very few have had gallbladder symptoms.

CLINICAL CHOLECYSTOPATHY

Clinical observations must be based on patients in whom disease or dysfunction of the gallbladder has given rise to symptoms; such observations cannot include the far larger group of individuals in whom the abnormal gallbladder has given rise to no recognizable clinical symptoms. Clinical cholecystitis includes, then, only those cases in which dysfunction or disease of the gallbladder is responsible for symptoms, usually but not always due to demonstrable organic gallbladder disease. The conditions found at operation do not always parallel the clinical observations. In certain cases, removal of an apparently normal gallbladder has cured biliary colic; in others, removal of a gallbladder full of stones has failed to relieve the patient's symptoms. Every surgeon has seen violent biliary colic spontaneously subside and the patient do remarkably well for many years.

Surgical studies since the beginning of this century have taught most that is known about clinical cholecystitis. Cholecystostomy and, later, cholecystectomy have been done on many thousands, and numerous follow-up studies have been made. Usually such studies have shown from 60 to 85 per cent of satisfactory results from the patient's standpoint; 83 per cent of satisfactory results have recently been shown in our own surgical follow-up. Many observers tell us that, the more typical the symptoms, the surer the relief following cholecystectomy.

Every surgeon occasionally sees advanced gallbladder disease at operation which was unsuspected clinically; conversely, he is frequently uncertain whether or not the exposed gallbladder is actually diseased. He undoubtedly frequently fails to detect small gallstones and gallbladder sand in the tense gallbladder seen in the fasting patient at operation. Recently we have given a glycerin emulsion of egg yolk and lecithin by mouth as a routine shortly before anesthesia (as suggested to replace the fat meal given for emptying the gallbladder in doing cholecystographic work). We have thus greatly facilitated surgical palpation of the gallbladder by having it half empty and have found the intestine collapsed almost as much as with spinal anesthesia.

Surgical pathologists have done much to show how common cholecystopathy really is—in fact, it is unusual for the surgical pathologist to report a normal gallbladder. Stones are found in approximately 40 per cent of surgically removed gallbladders in our clinic.

The past decade has added a wealth of knowledge concerning the liver and gallbladder. Studies in physiology, pathologic anatomy and roentgenology have afforded a better understanding than ever before of the intricacies of disease of these organs. Graham has summarized most of this knowledge in his recent book on the gallbladder.

From the Mason Clinic.

Read before the Section on Practice of Medicine at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

1. Blackford, J. M.: Gastric Symptoms, *J. A. M. A.* 77: 1410 (Oct. 29) 1921.

2. Stewart, M. J.: *Lancet* 2: 617 (Sept. 19) 1931.

3. Crump, Curtis: *Surg., Gynec. & Obst.* 53: 447-455 (Oct.) 1931.

4. Mentzer, S. H.: *Surg., Gynec. & Obst.* 42: 782 (June) 1926.

Surgical and pathologic studies have been very complete; and satisfactory late operative results have been frequently reported. Yet we are sure that the present ability to diagnose by history and objective examination a larger fraction of all diseased gallbladder calls for a note of conservatism in treatment—for surely not 6 per cent or more of all adult patients need gallbladder operations. Pathologists find that 60 per cent of adults are cholecystopathic and that all cholecystopathies have more or less hepatitis; but they speak in pathologic, not

not been advised in milder cases, and frequently operation has been advised but refused by the patient. This has given us a considerable series of cases of clinical cholecystitis in which medical treatment has been advised or in which surgical treatment has been refused and hence medical advice has been given. We have been surprised at the infrequency with which delay has resulted in emergency operation or disaster.

MEDICAL CHOLECYSTITIS WITH FOLLOW-UP

Five hundred case histories of unoperated cholecystitis have been reviewed for this study. Those showing local complications, such as cystic or common duct obstruction, cholangitis, pancreatitis, cholecystic empyema or associated gastric pathologic changes, have been excluded; likewise, cases in which operation was performed within six months of the time of examination.

Such exclusions left a considerable number of cases of chronic gallbladder disease for study. These were divided into four groups:

1. Indefinite symptoms attributed to cholecystitis.
2. Probable cholecystitis giving dyspepsia, without colic or with atypical colic.
3. Typical gallbladder colic or typical gallbladder dyspepsia or both.

TABLE 3.—Average Ages of Two Hundred Patients Who Tried Medical Management of Cholecystitis*

Group	Onset	Examination	Present
85 probable.....	35.2	45.1	53.7
59 typical.....	32.5	42.2	50.1
26 proved.....	37.1	45.1	56.5
170 living.....	34.4	43.3	52.8
30 dead.....	45.7	60.3	Lived 4 yrs.

* Clinical history of trouble, average nine years; average of follow-up study, nine and one-half years; duration of cases to present, eighteen and one-half years.

4. Gallbladder disease proved by roentgen demonstration of stones, or stones found at operation for other troubles or a history of colic followed by jaundice, or a positive cholecystogram.

We have discarded group 1 in this study because of uncertainty of diagnosis, leaving groups 2, 3 and 4, which may be designated as probable, typical and proved gallbladder disease; all cases suitable in our judgment for elective gallbladder surgery.

Two hundred cases in which medical treatment was elected or advised have been successfully followed after from five to fifteen years. This represents a 60 per cent successful follow-up of probable, typical and proved gallbladder disease cases available for study after an average of nine and a half years (table 3). The average length of history was nine years, so the total average duration from the onset of symptoms to the present is eighteen and one-half years. All available methods of follow-up study have been used; we have found it vastly more difficult to follow up medical than surgical cases. Diagnosis is assumed to be approximately 90 per cent correct, for these cases were studied by a group of careful clinicians, using all usual methods of studying gastro-intestinal disorders. Most of these cases were studied before cholecystograms came into use, but late in the series this method was employed. Immediate surgery was advised but refused in one third of these cases. A trial of medical treatment was suggested in two thirds, with the understanding that surgery was advisable later if relief was not obtained promptly by medical treatment.

TABLE 1.—Recent Routine Autopsy Studies: Cholecystopathy, Gallstones and Cancer

Author	Routine Autopsy Percentages			
	Gallstones	Cholecystopathy	Carcinoma	Gallstones with Carcinoma
Stewart: 6,284 cases.....	16.4	..	0.7	4
Crump: 1,000 cases.....	22.5*	60	2.4	7
Mentzer: 612 cases.....	21.6	66†	1.6	9

* Two hundred and fifty-seven gallstone cases show biliary duct stones.
† One hundred and fifty-seven of these cases show clinical symptoms.

clinical, language. Surgeons are inclined to believe that cholecystopathic individuals, particularly those with gallstones, require cholecystectomy for relief. Surgical conclusions are based on cases having serious clinical symptoms. Internists are divided among themselves; some feel that there is no satisfactory medical treatment of cholecystopathic patients; others have found that cholecystopathic patients can be persuaded to continue medical treatment almost indefinitely, whether relieved or not, and with little risk of developing critical complications.

Such apparent confusion exists because not all are thinking in terms of relief of symptoms, present and future. Some diseased gallbladders make a great clinical disturbance; others make less dramatic manifestations; but far more cholecystopathies cause no recognizable clinical disturbance and hence go untreated.

Medical follow-up studies after years of clinical symptoms of gallbladder disease have rarely been made.

TABLE 2.—Recent Routine Autopsy Studies: Cholecystopathy, Gallstones

Number of Cases		Ages by Decades	Percentages			
			Cholecystopathy		Gallstones	
Mentzer	Crump		Mentzer	Crump	Mentzer	Crump
65	38	0-20	1	30	0	0
21	91	21-30	23	45	5	9
69	92	31-40	73	38	15	9
106	120	41-50	68	56	14	24
128	144	51-60	70	60	21	25
147	257	61-70	70	67	22	41
73	202	71-80	71	73	34	52
6	56	81+	83	66	33	54
614	1,000	.....	66	60	20	33

There is no yardstick by which to measure the success of palliative treatment or to give the percentage of patients who do well without operation. This fact must be remembered in evaluating any method of medical or of surgical treatment.

Is there such a thing as medical treatment? Graham, in his book on the gallbladder, devotes only the last page to this subject, to say essentially that the treatment of cholecystitis is always surgical.

Training in surgical diagnosis led us to the opinion that the diagnosis of clinical cholecystitis usually indicated operation—yet for years immediate operation has

The average age was 43.3 years. More than two thirds of the patients were women. A history of biliary colic (table 4) was obtained in half of the cases in which operation was not subsequently done; in only two fifths of those with a history of colic was a continuation of colic since examination reported. Jaundice has been

TABLE 4.—Colic and Jaundice in One Hundred and Twenty-Seven Cases of Cholecystitis in Which Operation Was Not Performed, After Nine and One-Half Years

	History of Colic 50%	Follow-Up	
		Colic 20%	Jaundice 8%
71 probable.....	25	13	6
42 typical.....	29	10	4
14 proved.....	11	0	1
127 totals.....	65	23	11

noted since diagnosis in 8 per cent of all cases. The chief complaint of more than half of the patients was dyspepsia rather than pain.

Gastric analysis (table 5) by the Ewald-Boas meal was done in 134 instances. Anacidity or subacidity was the rule; normal acids were frequently present, and high acids (above 40 free hydrochloric acid) were unusual.

MEDICAL TREATMENT

The patient with gallbladder dyspepsia has usually found that certain rich and tasty foods disagree, that overloading the stomach brings on trouble, and that high seasonings, fried foods and alcohol are often distressing. Automatically, he tries to avoid the things that make trouble. By medical management we mean

TABLE 5.—Total Free Acids in One Hundred and Thirty-Four Cases of Medical Cholecystitis; Ewald-Boas Meal

	Free Acid			
	0 Absent 23%	1-20 Low 34%	21-40 Average 34%	40+ High 8%
Probable.....	18	24	25	5
Typical.....	10	12	19	4
Proved.....	3	10	2	2
Total.....	31	46	46	11

the use of a diet list with general instructions and elimination of foods that usually disagree with such patients. We have advised periods of the use of a morning saline solution, usually sodium phosphate, and biliary salts before meals, with relief of constipation. Alkalis have occasionally been used. Infective foci have usually been relieved, and we have laid emphasis on reasonable physical exercise. Medical biliary drainage (Lyons-Meltzer) has not been used for treatment.

Such a regimen has been instituted in all cases but has been followed only as the patients cared to follow it. Treatment has not been closely supervised.

The results of the total study can be briefly stated. Two hundred cases (table 6) show that 37 per cent of the patients are relieved completely or sufficiently to be satisfied with their present status. Fifteen per cent are dead, but, of the thirty patients dead, only two died from gallbladder disease, one following operation for a ruptured gangrenous gallbladder and the other following operation for acute pancreatitis; twenty-eight

patients died at an average age of 64 from other causes, chiefly diseases of the heart or kidneys, apoplexy and cancer; they were not operated on for gallbladder disease. (Surgeons usually figure end-results in percentages of those still living, so we may state that 42 per cent of the patients still living were relieved after medical advice.)

Surgical treatment has been sought by approximately 21 per cent of the patients, and 27 per cent more should have had it because they were not relieved by general advice. Of forty-three patients who have been operated on at our clinic or elsewhere, three fourths state that they are well satisfied with the surgical results. Operation was advised in two thirds of the cases in which operation was later done, compared to such advice to one third only of the total series.

COMMENT

This study has confirmed our impression, contrary to surgical literature, that cholecystitis may frequently be successfully treated (table 7) along medical lines. The risk of developing a surgical emergency or calamity

TABLE 6.—Status After Nine and One-Half Years in Two Hundred Cases of Medical Cholecystitis

	Medical		Operative		Dead 15%
	Good 37%	Bad 27%	Per Cent of Living 21%	Per Cent of Living 33%	
Probable.....	39	32	14	16	12
Typical.....	26	16	17	30	12
Proved.....	8	6	12	40	6
Total.....	73	54	43	86	30

while under medical treatment is not great; in fact, it is less than the risk of the best elective gallbladder surgery. It should be recognized that the disease is very chronic and has caused symptoms for an average of nearly ten years before the patient is seen in the examining room. Doubtless earlier advice would give far better results from medical treatment.

We believe emphatically that, when medical management fails to relieve promptly, surgery should be urged, for the large majority of medical failures may be thus relieved and complications avoided. Complications such as obstructive jaundice, empyema or rupture of the gallbladder multiply the surgical risk by from five to ten times and may cause irreparable hepatic damage even if the patient survives operation.

TABLE 7.—Indigestion in One Hundred and Twenty-Seven Cases of Cholecystitis in Which Operation Was Not Performed, After Nine and One-Half Years

	Much Improved 53%	Better 28%	No Better 18%	Worse 1%
	37	21	12	1
Probable.....	37	21	12	1
Typical.....	19	13	9	0
Proved.....	10	1	1	0
Total.....	66	35	22	1

The development of a malignant gallbladder disease from delay is a definite risk, but it must be relatively small. Autopsy statistics show that 60 per cent of all adults are cholecystopathic, but that a malignant condition in the gallbladder develops in only about 2 per cent (table 8). Patients having carcinoma of the gall-

bladder are usually past the age of 60 and almost always have gallstones.

Careful clinical study of the patient is still the best method of study. The x-rays and the clinical laboratory are indispensable adjuncts; they will frequently confirm and occasionally make the diagnosis. They cannot size up the case or advise the patient. This must be done after painstaking clinical study, with consideration of the patient from all angles, rather than entirely from the objective standpoint.

TABLE 8.—Recent Routine Autopsy Studies: Cancer of Gallbladder

Ages by Decades	Number of Cases			
	Mentzer		Crump	
			Cancer	
			Mentzer	Crump
0 - 20.....	65	38		
21 - 30.....	21	91		
31 - 40.....	68	92	1	
41 - 50.....	106	120	2	1
51 - 60.....	128	144	2	4
61 - 70.....	147	257	8	3
71 - 80.....	73	202	1	12
81+.....	6	56	..	6
	614	1,009	14	28

Such clinical study will make less frequent the error, followed by poor results, of removing the gallbladder, even though it has stones, in attempting to cure mucous colitis, renal calculi or pyelitis, functional dyspepsia associated with enteroptosis, nervous breakdowns with irritable bowel, root pains of arthritis or tabes, migraine, constipation neuroses and the like.

CONCLUSIONS

1. Thirty-seven per cent of chronic cholecystitis patients have had satisfactory relief over an average of more than eight years without operation.

2. Forty-eight per cent of patients with chronic cholecystitis who were not operated on have either come to operation later or should have been operated on later on account of continuation of symptoms.

3. Fifteen per cent of patients are dead, but only 1 per cent died directly from gallbladder disease.

4. The patient with uncomplicated cholecystitis should be given a trial on medical treatment. If not markedly relieved promptly, he should be operated on.

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ABSTRACT OF DISCUSSION

DR. FRANK SMITHIES, Chicago: The authors emphasized that distinction must be made between pathologic examinations showing proof of gallbladder disease and the clinical symptoms supposedly due to gallbladder disease. Twenty-three per cent of patients in middle life who have had "biliary tract disease" for as long as five years have no hydrochloric acid secretion. If they have been ill ten years they not only secrete no hydrochloric acid but they have definitely provable disturbances in the function of the liver. In this widespread "biliary tract syndrome" the pancreas also is injured, with regard not only to its digestive capacity but also in respect to its internal secretion. Eight per cent of my patients of the group being considered exhibited intermittent or constant glycosuria. While the authors' 37 per cent report themselves as being reasonably satisfied with their progress, it is likely that in many instances should the individual's digestive function and physical condition be closely scrutinized, he will admit or exhibit dyspepsia or altered physiologic function of some grade. When "gallbladder" patients remain not operated on the chief reason they remain in relative comfort and safety is that they possess

fairly good drainage from the hepatic or even the cystic ducts, and in patients with calculi the stones do not wander. Only briefly can be mentioned one of the common but not sufficiently emphasized effects of lack of drainage in biliary tract patients: namely, hypertension. When liver drainage is attained, whether by operation or by the duodenal tube, many patients will experience not only a transient but often a permanent reduction in blood pressure. I suggest that, in hypertension patients on whom gallbladder operations are performed, cholecystostomy be done instead of cholecystectomy, and that long-continued liver drainage be the objective.

DR. JAMES F. WEIR, Rochester, Minn.: The treatment that the authors have instituted in this series of cases of cholecystitis may be considered palliative. Surgical therapy is generally conceded to be the only cure for well developed disease of the gallbladder. It is undertaken to relieve pain and dyspepsia. To a lesser extent operation may be considered prophylactic: namely, to avoid complications of an inflammatory or malignant nature and occasionally to eradicate a focus of infection. For various reasons, many cases do not come to operation. The value of the authors' presentation lies in their follow-up of those cases in which operation has not been undertaken. Such information may be common knowledge, but there are few if any such data in the literature. Dr. Blackford states that such a follow-up is more difficult than that of surgical cases, yet he is able to present successful responses in 60 per cent. Many may object to the accuracy of the data compiled or the significance of any conclusions drawn. Figures may not be the final criteria, but the general theme of his results cannot be ignored and represents the result of a form of investigation of definite clinical value. At the Mayo Clinic many of the late painful sequelae and other unsatisfactory states after operation occur most commonly in cases in which operation is performed late. In some European countries the internists are slow in referring such patients for operation, and consequently the disease is generally more advanced than in this country. Patients are seen who are free of symptoms, and yet at exploration a surprising degree of disease is observed, such as subacute cholecystitis. Thus, caution must be exercised and such patients should have treatment which will give them relief and save them from the late disastrous results of disease of the biliary tract. Although at least a third of the group were progressing satisfactorily over an average of nine and a half years, 50 per cent of the authors' patients had or should have been operated on. In cases in which there is a tendency for the development of complications which operation seeks to avoid, there is usually ample warning such as progressive pain and dyspepsia, and the proper treatment should be instituted. However, the results of the authors' study at least offer justification for considerable conservatism in the treatment of many of the cases of unsuspected cholecystitis diagnosed on the basis of cholecystography.

DR. J. M. BLACKFORD, Seattle: Dr. Smithies is correct in stating that a considerable fraction of these patients have either absent acids or low acids. There are so few hyperacidities that one almost hesitates to make the diagnosis of gallbladder disease in face of high acids, in this series about 8 per cent of all. The difficulty of following up medical cases is considerable after the lapse of time such as this study has been based on. The matter of the hypertensive heart raises the question of the gallbladder as a focus of infection. I have tried to find some evidence that these patients had a hard time on account of harboring a focus of infection but I was not able to do so. Dr. Weir mentions the surgical side with some emphasis. I hope no one will feel that I do not believe in gallbladder surgery. However, these autopsy figures have brought out a fact that I think surgeons do not fully appreciate. Approximately 20 per cent of adults are found to have gallstones in the gallbladder in routine consecutive autopsies. Approximately two thirds of these patients are women. I think all will agree that at least double or possibly two and one-half times the number who carry gallstones have definitely diseased gallbladders. If we allow for difference in sex we will have to suppose that in this audience somewhere near 10 per cent have gallstones now, and I doubt if the accidental finding of gallstones without serious symptoms should lead 1 or 10 per cent of us to surgery at the present time.

ESTIMATION OF CARDIAC AREA
IN CHILDREN

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Many years ago Bardeen introduced in this country a technic for measuring the size of the heart by means of long-distance roentgenograms. Four points are involved:

1. A knowledge of the approximate amount of triangular distortion remaining even for distances of 2 meters or greater. This is usually less than 5 per cent.

2. A method of drawing in, more or less arbitrarily, the upper and lower borders, thus completing the outline of an area bounded on either side by the edges of the heart silhouetted against air-containing lung.

3. Adaptation of a simple engineering instrument for the measurement of the area thus outlined.

4. The establishment of tables showing the normal range of the relationship between this area and certain body measurements in normal subjects.

Nine years ago one of us, working with Eyster at the University of Wisconsin, amplified Bardeen's tables of the normal size of the heart of adults by developing a formula for the prediction of the cardiac area from measurements of the height and weight.

$$\bar{F} = 0.87 H + 0.34 W - 63.8$$

Since then we have made routine clinical use of this formula and of tables based on it, and Eyster, after applying it to independent groups of normal subjects, has been able to demonstrate that it fits the independent normals about as well as the originals. Furthermore, it is satisfactory in distinguishing between normal groups and groups of subjects suffering from heart disease.

This formula, which we refer to as the "adult formula," is not satisfactory for children, but until now we have lacked the opportunity to study an adequate group of normal children and construct a new "child formula." The present report is concerned with the results of such a study on a group of 169 children ranging from 2.9 years to 18.8 years of age. These children live at the Mooseheart City of Childhood, an institution operated by the Loyal Order of Moose. We have been able to study them because of the cooperation of the officials of that order and particularly of Dr. M. L. Reymert, director of the Mooseheart Laboratory for Child Research.

Approximately a dozen different formulas were developed. Some covered the entire group: one using sitting height, age and weight; another, sitting height and weight; another, standing height and weight. It was found, however, that the correlation between stature and sitting height was so high (0.966) that there was no advantage in using both, and since the measurement of standing height requires less special equipment that measurement was considered preferable to sitting height. The inclusion of age in the equation improved the prediction slightly but the gain was too little to offset the disadvantages of the rather unwieldy tables that would be necessary if this extra variable was used. Independent formulas for boys alone were

slightly more accurate than those for the entire group, but here, too, the slight advantage did not seem to justify the inconveniences involved.

On the other hand, in spite of the fact that the correlation between height and weight is high (0.935), we became convinced that height should be retained in the formula because the errors introduced when it is omitted tend to accumulate in the more obese subjects. Its retention probably makes for more universal applicability of the formula.

Table for Predicting the Cardiac Area of a Child from the Height and Weight*

Height, Cm.	0.180 H + 13.7		Weight, Kg.	1.045 W		Height, Cm.	0.180 H + 13.7		Weight, Kg.	1.045 W	
	Sq. Cm.			Sq. Cm.			Sq. Cm.			Sq. Cm.	
81	28.3	12.0	12.5	140	38.9	41.5	43.4				
82	28.5	12.5	13.1	141	39.1	42.0	43.9				
83	28.6	13.0	13.6	142	39.3	42.5	44.4				
84	28.8	13.5	14.1	143	39.4	43.0	44.9				
85	29.0	14.0	14.6	144	39.6	43.5	45.5				
86	29.2	14.5	15.2	145	39.8	44.0	46.0				
87	29.4	15.0	15.7	146	40.0	44.5	46.5				
88	29.5	15.5	16.2	147	40.2	45.0	47.0				
89	29.7	16.0	16.7	148	40.3	45.5	47.5				
90	29.9	16.5	17.2	149	40.5	46.0	48.1				
91	30.1	17.0	17.8	150	40.7	46.5	48.6				
92	30.3	17.5	18.3	151	40.9	47.0	49.1				
93	30.4	18.0	18.8	152	41.1	47.5	49.6				
94	30.6	18.5	19.3	153	41.2	48.0	50.2				
95	30.8	19.0	19.9	154	41.4	48.5	50.7				
96	31.0	19.5	20.4	155	41.6	49.0	51.2				
97	31.2	20.0	20.9	156	41.8	49.5	51.7				
98	31.3	20.5	21.4	157	42.0	50.0	52.3				
99	31.5	21.0	21.9	158	42.1	50.5	52.8				
100	31.7	21.5	22.5	159	42.3	51.0	53.3				
101	31.9	22.0	23.0	160	42.5	51.5	53.8				
102	32.1	22.5	23.5	161	42.7	52.0	54.3				
103	32.2	23.0	24.0	162	42.9	52.5	54.9				
104	32.4	23.5	24.6	163	43.0	53.0	55.4				
105	32.6	24.0	25.1	164	43.2	53.5	55.9				
106	32.8	24.5	25.6	165	43.4	54.0	56.4				
107	33.0	25.0	26.1	166	43.6	54.5	57.0				
108	33.1	25.5	26.6	167	43.8	55.0	57.5				
109	33.3	26.0	27.2	168	43.9	55.5	58.0				
110	33.5	26.5	27.7	169	44.1	56.0	58.5				
111	33.7	27.0	28.2	170	44.3	56.5	59.0				
112	33.9	27.5	28.7	171	44.5	57.0	59.6				
113	34.0	28.0	29.3	172	44.7	57.5	60.1				
114	34.2	28.5	29.8	173	44.8	58.0	60.6				
115	34.4	29.0	30.3	174	45.0	58.5	61.1				
116	34.6	29.5	30.8	175	45.2	59.0	61.7				
117	34.8	30.0	31.4	176	45.4	59.5	62.2				
118	34.9	30.5	31.9	177	45.6	60.0	62.7				
119	35.1	31.0	32.4	178	45.7	60.5	63.2				
120	35.3	31.5	32.9	179	45.9	61.0	63.8				
121	35.5	32.0	33.4	180	46.1	61.5	64.3				
122	35.7	32.5	34.0	181	46.3	62.0	64.8				
123	35.8	33.0	34.5	182	46.5	62.5	65.3				
124	36.0	33.5	35.0	183	46.6	63.0	65.8				
125	36.2	34.0	35.5	184	46.8	63.5	66.4				
126	36.4	34.5	36.1	185	47.0	64.0	66.9				
127	36.6	35.0	36.6	186	47.2	64.5	67.4				
128	36.7	35.5	37.1	187	47.4	65.0	67.9				
129	36.9	36.0	37.6			65.5	68.4				
130	37.1	36.5	38.1			66.0	69.0				
131	37.3	37.0	38.7			66.5	69.5				
132	37.5	37.5	39.2			67.0	70.0				
133	37.6	38.0	39.7			67.5	70.5				
134	37.8	38.5	40.2			68.0	71.1				
135	38.0	39.0	40.8			68.5	71.6				
136	38.2	39.5	41.3			69.0	72.1				
137	38.4	40.0	41.8			69.5	72.6				
138	38.5	40.5	42.3			70.0	73.2				
139	38.7	41.0	42.8								

* Cardiac area = $0.180 \times \text{height} + 1.045 \times \text{weight} + 13.7$.
Example: For a child 147 cm. tall weighing 43 Kg., add the value of 40.2 sq. cm. obtained from the height column to the value 44.9 sq. cm. obtained from the weight column. The sum 85.1 sq. cm. is the predicted frontal plane area of the heart.

We have, therefore, chosen the following formula as the one best suited to clinical use:

$$\bar{F} = 0.180 H + 1.045 W + 13.7$$

\bar{F} = the area in square centimeters of the frontal plane silhouette of the heart

H = the child's height in centimeters

W = his weight in kilograms.

This we refer to as the "child formula."

In order to facilitate application of the formula, we have expressed it in a table similar to those used with the adult formula (table).

The column at the left lists statures in centimeters (H). The second column shows values corresponding

to 0.180 H plus the constant 13.7. In the third column are weights (W) in kilograms, and opposite each in the fourth column the value for 1.045 W.

To find the probable normal cardiac area of a particular child, one locates his height in the height column and, to the figure corresponding to this value, adds the figure corresponding to his weight. The sum of the two constitutes the predicted cardiac area in square centimeters.

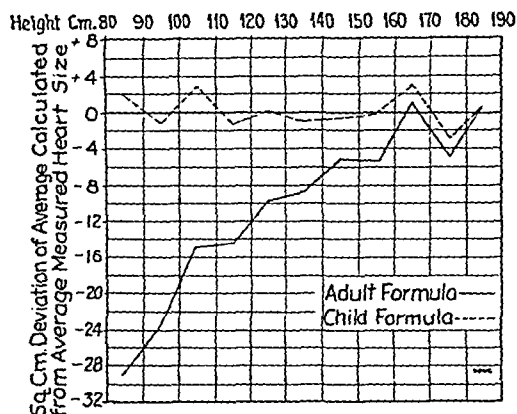


Chart 1.—Central tendencies of cardiac area predictions by height groups.

While it was obvious that the adult formula with its large negative constant would predict hearts much too small for the smallest children, still it was only by trial that we could determine the relative accuracy of the two formulas throughout the height range. This study has been made, and chart 1 shows the relationship between the observed areas of the Mooseheart children and predictions from the adult formula and the child formula. The cases were separated into eleven classes on the basis of height, and the predictions for the cardiac area by each formula were averaged in each class. The amounts by which these average predictions varied from the average observed size were recorded as points which, joined together, form the curves of the graph. The horizontal zero line represents the average observed size of the heart in each group. The broken line shows the amount by which predictions of the size of the heart from the child formula deviate from the observed size. Note that the deviations swing from plus to minus back and forth across the zero line but never depart from it greatly. The solid line shows the amounts by which predictions from the adult formula deviate from observed areas. Here in the shorter subjects the prediction is as much as 28 sq. cm. too small, but for heights above 160 the results are about as satisfactory as with the child formula.

Chart 2 approaches the problem from another direction. For every case in each of the eleven height groups there was tabulated the absolute amount by which the prediction from the child formula and that from the adult formula deviated from the observed cardiac area. The average amount of this deviation was computed for each group, and then these averages were charted. The horizontal zero line shows the observed cardiac areas. The broken line records the average deviations of the predictions from the child formula; the solid line, the average deviations of the predictions from the adult formula.

The steady upward slope of the broken line is caused by the fact that we have plotted absolute values rather than percentages. With increasing stature, the measured size of the heart becomes larger, and the same is true of the absolute values of the deviations.

If one uses two formulas for different classes of a population which merge gradually with one another, one is faced with the problem of deciding where the validity of one ceases and the validity of the other begins. The difficulty is minimized in this case by the fact that while the child formula is much better in predicting the size of the heart in children less than 160 cm. and the adult formula is to be preferred in adults, still there is a considerable intermediate group of taller children in which the two are about equally satisfactory. This will probably make it possible to set up an arbitrary height dividing line and then use the child formula below and the adult formula above that point. Subject to further experiment, we are using 170 cm. as the arbitrary dividing line. This corresponds roughly to an age of 17 years. In doubtful cases we sometimes predict the area from both formulas and extract the mean of the two predictions. It is possible, of course, that another study on a larger population might allow construction of an equation applicable throughout a wide range of heights, weights and therefore ages.

Before final judgment can be passed on the validity of our child formula, it is necessary that it be applied to an entirely independent sample of the population. As yet we have not been able to make such a study on a group large enough to establish a valid statistical check and, since studies of this sort are expensive in time and material, we may not soon be able to do so. We have, however, been able to apply the equation to a group of twenty-two children from the pediatric service of the University of Chicago Clinics, whose hearts were regarded as normal on physical examination. The children were not normal, otherwise they would not have been brought to the clinic, but patients with evidence of heart trouble were excluded.

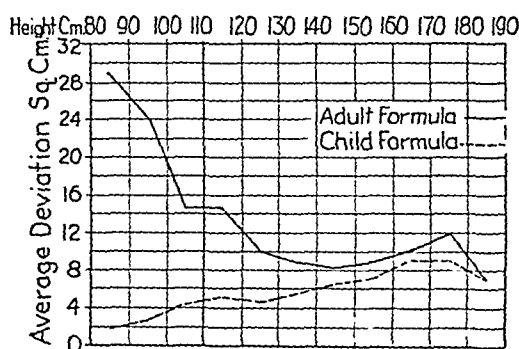


Chart 2.—Average absolute deviation of measured from calculated heart size by height groups.

The results of this study are shown in chart 3. The polygon below deals with 169 Mooseheart cases. It shows the number of instances in which the measured area was larger or smaller than the predicted area by 5, 10, 15, 20 per cent and so on. The upper polygon shows the same analysis of twenty-two children from the pediatric clinic, though it should be noted: The vertical scale, which shows the number of cases, has been doubled to make the findings more obvious. The little rectangular block at the left of the figure repre-

sents the findings in a child of 10 with a diagnosis of cerebral agenesis and epilepsy. In this case the observed cardiac area was 38.5 per cent less than the prediction. At the right of the figure, a similar block records the situation in a child of 5 who had suffered from acute bronchitis every winter since birth. Here the observed cardiac area was 27 per cent greater than the predicted area. With these exceptions, observations on this small group conform with those of the original series.

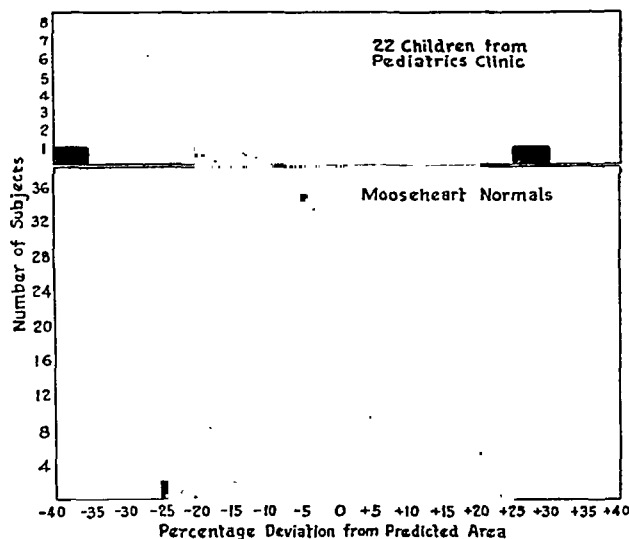


Chart 3.—Results of study on children.

It is possible that special formulas including a consideration of body build may be more accurate in predicting the size of the heart of unusually slender or unusually obese children.

SUMMARY

1. Roentgen examinations conducted for the purpose of finding out whether the heart of a sick child is enlarged presume a knowledge of the normal size of the heart of that child. Tables and formulas exist for predicting the normal size of the heart from the height and weight in adults, but there has been need for similar equations for children.

2. As the result of teleoroentgenographic studies on 169 carefully selected normal children ranging in age from about 3 years to about 19 years, such an equation has been developed. It reads:

$$\bar{F} = 0.180H + 1.045W + 13.7$$

3. A table is published by means of which estimates of the normal size of the heart can be made rapidly without computations.

ABSTRACT OF DISCUSSION

DR. JULIUS H. HESS, Chicago: In the past the radiographer would report on the relationship of the heart diameter to that of the chest wall, and calculations were largely based on whether there was an increase over the normal or expected normal. The authors have attempted to produce for the child a table comparable to their earlier studies for use with adolescent and older individuals. They have simplified the work of estimating the size of the heart or at least have furnished a standard set of formulas by which, with the simple method of Bardeen, the size of the heart can be estimated. They have not attempted to replace a physical examination or examination by other mechanical methods. In other words, they have simply presented a set of figures or a formula that will supply a working standard; to be used as a comparison for the child at

hand. Naturally the depth of the heart, the cardiovertebral depth, must be known. This can be estimated by making an esophagram. It must be recognized that early in cardiac conditions there may not be any deviation even in the depth, let alone in the surface size of the heart. But later, in mitral insufficiency complicated by stenosis, in mitral conditions complicated by the aortic regurgitation more especially, there are marked deviations. Of course, this simply gives the surface measurement, and it must be supplemented with further clinical and physical data in order to present a true clinical picture of the condition of the heart. It is necessary to have the pulse rate at the time of examination. An electrocardiogram can be of immense value, as well as the systolic and diastolic blood pressure. Last, but not least, in order to come to a definite conclusion, one must have a careful history and a physical examination by the stethoscope and by palpation. The authors have presented something that is of material assistance and much more accurate than the simple estimation of the transverse diameter of the heart as against that of the chest wall.

DR. PAUL C. HODGES, Chicago: It is true that this paper deals not at all with heart disease but rather with normal heart size. There is a quite general opinion that the size of a person's heart as seen in roentgenograms is related to the diameter of the chest more closely than to any other body diameter. I have held that view and my teachers have held it before me. The only difficulty with it is that it is not true. Strangely enough, Eyster has been able to show by detached mathematical procedures that heart size is related to height and weight more closely than it is to chest diameter or numerous other body diameters studied by him. To make an ordinary short-distance chest film of a child and just look at the heart is better than to make no film at all. To make the film at a long distance is still better. To measure the transverse diameter of the heart in a long-distance film is better than to guess at the diameter, but to measure the area is better than to measure the diameter.

TREATMENT OF CHRONIC INFECTION OF THE PELVIS

A CONSIDERATION OF THE ELLIOTT METHOD

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I shall consider in this paper the surgical and non-surgical treatment of chronic infections of the pelvis by prolonged heat in the vagina, as applied in Elliott's technic in addition to the surgical procedures in delayed cases. The advantages of this technic postoperatively in reducing morbidity in cases in which operation is necessary will also be considered.

In view of the fact that an extremely high percentage of chronic invalidism among women is directly attributed to inflammatory diseases of the pelvis attended by pain, backache, menstrual irregularities, chronic exhaustion and sterility, its significance to the general practitioner becomes apparent at once. Any new method of treating inflammation of the pelvis, which has been tested and shown to be of distinct advantage in reducing the period of disability and the number of cases in which operation would otherwise be required, should be tried.

THE ERA OF CONSERVATIVE SURGERY IN GYNECOLOGY

Simpson,¹ in 1909, was influential in establishing a new era in the treatment of pelvic inflammation of

From the Division of Surgery, the Mayo Clinic.
Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

1. Simpson, F. F.: The Choice of Time for Operation for Pelvic Inflammation of Tubal Origin, Surg., Gynec. & Obst. 9:45-62 (July) 1909.

tubal origin. He reported a series of 456 cases in which surgical treatment was given, with a mortality rate of 1 per cent following a delayed period of conservative treatment, as compared to a rate of from 15 to 20 per cent accompanying the then established plan of immediate operation. He maintained that the patient should have recovered from the acute attack, which usually required that the temperature be normal for approximately three weeks even after examination of the pelvis, thereby indicating complete absorption of the inflammatory exudate, before any operation was advisable.

Crossen,² also in 1909, independently advocated similar fundamental principles and, in addition, distinguished between the clinical picture of pelvic infection due to gonococci and that due to streptococci. He stressed particularly the mode of infection, the anatomic situation, and the virulence of each organism, because a fundamental knowledge of these was essential to separate the groups clinically and to institute appropriate treatment in each case. The point of importance was that gonococci affect primarily the tube and secondarily the ovary and pelvic peritoneum, producing a pus tube or tubo-ovarian abscess which usually became sterile within a few weeks, whereas streptococci penetrate the wall of the uterus and extend into the connective tissue, producing perimetritis with fixation and tenderness of the pelvic organs. The virulence of the streptococcus persists indefinitely, and an abscess rarely becomes sterile. In order that other investigators might more easily distinguish between the two infections, Crossen pointed out that the distinguishing features of a chronic perimetrial mass are: (1) its situation in connective tissue, usually in the broad ligament; (2) its intimate blending with the wall of the uterus, as though it were a part of it; (3) its intimate blending with the wall of the pelvis, as though it were an outgrowth from it, and (4) its hardness, often simulating a cartilaginous or bony tumor growing from the wall of the pelvis. A tubo-ovarian mass, on the other hand, was distinguished by its situation high in the pelvis or prolapsed into the culdesac and not blending so intimately with the walls of the uterus or pelvis; it was usually softer also. Crossen emphasized that abdominal section for a streptococcal mass in the pelvis is always dangerous, as fatal peritonitis might result, and that operation in all other cases should be delayed until the period of probable sterilization has passed, except in rare cases in which, in spite of palliative measures, life is endangered by the severity of the infection.

The conservative treatment of chronic perimetritis was further emphasized by McMorro, since this group is composed of many patients who continually suffer from dysmenorrhea, backache, leukorrhea, vague and obscure pains associated with headache, nausea and menstrual irregularities; frequently repeated pelvic operations were performed without benefit. The mode of treatment was that which was then in use in the Allgemeines Krankenhaus in Vienna; this consisted of gentle pelvic massage with a view to increasing the blood supply to the uterus and perimetrial cellular tissue, stretching the scars in the broad ligaments and breaking up the adhesions in the culdesac and thereby

replacing the uterus in its normal position. Several cases are reviewed in which results were excellent; the patients were relieved of their symptoms and the normal menstrual cycle was restored. A distinct drawback is that the treatment should be continued weeks or months.

The bacteriologic studies of salpingitis by Curtis⁴ have advanced the idea of conservative treatment of such conditions. He concluded that fallopian tubes infected with the gonococcus become sterile approximately fifteen days after the symptoms of the acute infection have subsided and that if symptoms reappear later they are due to reinfection and not to exacerbation of the original infection. It is his belief that if reinfection can be avoided in cases in which gonorrheal salpingitis is present, clinical cure can be obtained without operation in 85 per cent of the cases. In the small group of 15 per cent, surgical treatment will be required, but this should be directed toward conservation of tissue rather than its removal. Furthermore, in order to be reasonably sure of avoiding operation in cases in which streptococcal infection is active, he advised that operation be delayed two years from the time of the original infection.

Miller,⁵ in 1927, reviewed all the arguments of the advocates of immediate operation for inflammatory diseases of the pelvis, and from his results and those of others he was satisfied that conservative treatment was the procedure of choice. However, not infrequently for patients in charity hospitals and for some private patients, the economic factor might influence a surgeon to operate before it is entirely desirable, although this should not be done until the temperature has been normal for ten days, even after repeated bimanual pelvic examinations. Aldridge⁶ concluded, from his studies of operative results in 1,066 cases of salpingitis, that laparotomy for the cure of salpingitis, when the infection is still active, should be avoided, since his analysis proved that operation in the presence of infection is accompanied by an unjustifiable mortality, excessive morbidity, especially from shock, sepsis and defective healing of the wound as well as disappointing end-results. Furthermore, appropriate conservative palliative measures should be instituted in all cases immediately over long periods, with the object of effecting spontaneous cure.

Bourne, Bonney and Bell,⁷ although advocating conservative treatment for pelvic infections resulting from the streptococcus, feel that when infections are caused by the gonococcus, conservative surgical procedures, such as incision and drainage of the fallopian tubes or salpingectomy, are preferred during the acute attack, particularly if they seem advisable as a protective measure against future operation on the pelvis to conserve ovarian tissue. Such views concerning salpingitis of gonococcal origin are in direct variance with those of many able gynecologists in this country; it is also true that many advocate early operation, but I feel that they are in the minority. The trend toward palliative measures, such as hospitalization, Fowler's position, ice bags to the lower part of the abdomen, hot douches or diathermy, vaccine and protein therapy, is greater today among general practitioners and gynecologists than ever before.

2. Crossen, H. S.: What Is the Preferable Time for Abdominal Operations for a Chronic Inflammatory Mass in the Pelvis? *Surg., Gynec. & Obst.* 9: 405-416 (Oct.) 1909.

3. McMorro, Frank: Some Old Pelvic Inflammatory Diseases: Their Nonsurgical Treatment, with Report of Cases, *J. A. M. A.* 60: 900-908 (March 29) 1913.

4. Curtis, A. H.: Bacteriology and Pathology of Fallopian Tubes Removed at Operation, *Surg., Gynec. & Obst.* 23: 621-631 (Dec.) 1921.

5. Miller, C. J.: A Rational Treatment of Tubal Disease, *Surg., Gynec. & Obst.* 45: 110-114 (July) 1927.

6. Aldridge, A. H.: An Analysis of Operative Results in 1,066 Cases of Salpingitis, *Am. J. Obst. & Gynec.* 19: 381-391 (March) 1930.

7. Bourne, A. W.; Bonney, Victor, and Bell, W. B.: Discussion on the Treatment of Acute Salpingitis, *Brit. M. J.* 2: 399-402 (Sept. 8) 1923.

HEAT FOR INFLAMMATION OF THE PELVIS

Although the use of heat in the treatment of pelvic inflammatory disease has never been considered the principal factor of all the conservative measures that have been applied from time to time, nevertheless its use in some form has been progressively increased in recent years. Early medical records refer to the hot vaginal douche as a cleansing agent, used for the relief of pelvic pain. Holden and Gurnee⁸ related that German physicians heated shot and poured it into the vagina in order to maintain prolonged heat and greater distention of the vagina than could be obtained by the injection of hot water alone. The therapeutic effect of prolonged hot douches was advocated by Gellhorn,⁹ who discovered that the mucous membrane of the vagina could tolerate much higher temperatures than the skin of the vulva or perineum. He advised using no less than 2 gallons of water at a temperature of from 115 to 120 F. as a vaginal douche, placing the patient in a bath tub with the skin of the perineum and external genitalia protected with petrolatum. He reported excellent results from the method in inflammatory disease of the pelvis, and in many such cases the patients were clinically relieved without operation.

Because it was difficult to obtain proper nursing care, or because patients were unable to administer to themselves a prolonged vaginal douche, other methods have been developed which make it possible to apply heat of a constant temperature in the vagina for a fixed period; the degrees of heat can be automatically varied according to the tolerance of the patient and the severity of the inflammatory disease. The first of these methods was medical diathermy. This has been used by gynecologists practically everywhere, and the beneficial results obtained are unquestioned. Cherry¹⁰ stated that in 72 per cent of his series of 100 cases, the pelvic inflammation was either improved or cured. It was his opinion that the beneficial results were directly due to the destruction of bacteria in the tissues from the prolonged high temperatures in the vagina, which varied from 104 to 122 F. When used before operation in chronic cases for several days, there was more vascularity and mobility of the pelvic organs, thus rendering conservative operations easier and contributing to a much smoother convalescence. Scheffey and Schmidt,¹¹ in a carefully studied group of cases of inflammatory diseases of the pelvis, obtained about the same percentage of good results; they attributed these results not to the destruction of organisms in the tissues but to the increased circulation incident to the prolonged heat in the vagina, which produced an enormous local increase of phagocytic leukocytes, increased cellular metabolism and the absorption of exudates. Gellhorn, and other investigators who used diathermy extensively at one time, were of the opinion that the temperature in the tissues between the two electrodes could average from 104 to 122 F., but Bettman and Crohn,¹² in carefully controlled experiments, concluded that the specific resistance of the various tissues between the electrodes, including the skin and the vaginal

mucous membrane, confines the main increase in temperature near the electrodes, with only a proportionate increase in the deeper tissues.

Medical diathermy unquestionably would have been used more extensively by the general practitioner, but it required considerable costly apparatus and much experience with and knowledge of the diathermic current. Burns of the vaginal mucous membrane have been reported following its use. Another very distinct objection to an electrode in the vagina is the anatomic configuration of the vaginal mucous membrane. In normal conditions this is in rugae or folds, whereas in inflammatory conditions these may be greatly increased so that temperature produced from an electrode would be quite unevenly distributed and therefore less effective than some apparatus that would distend the vagina, thereby flattening out the vaginal folds and obtaining greater surface area and closer contact to the diseased adnexa.

A distinct advance in the use of heat over preceding methods has been achieved by Elliott,¹³ who devised a rubber bag that can be inserted in the vagina around the cervix through which a current of hot water maintained at a constant temperature is circulated by a small electric motor while the water pressure delivered by the pump distends the bag in the vagina. The temperature of the water and the pressure in the bag may be absolutely controlled for any length of time. The temperature of the water in the machine is regulated by a thermostat, and investigations so far reveal that the temperature should not exceed 130 F. The average time for a treatment is one hour, which varies, depending on the patient's tolerance to heat. Holden has shown that a temperature of 130 F. in the vagina for one hour will produce a temperature of 106 F. in the pelvic peritoneal cavity and rectum and a temperature of 104 F. within the bladder without any disturbance in the general temperature of the body. Furthermore, it has been observed that there is marked hyperemia in the pelvic tissues, an average increase of 17 per cent in leukocytes in 87 per cent of patients treated, a local elevation of temperature in the vagina, uterus, rectum, bladder and pelvic peritoneal cavity of from 5 to 7 degrees F. and a profuse discharge from the cervix and vagina.

In 500 cases of acute and chronic inflammation of the pelvis in which the Elliott method of treatment was used by Holden and Gurnee, excellent results were reported. In some cases, treatments were given as a preoperative preparatory measure, but after a few treatments the lesions disappeared and operation was not necessary. In ten cases of pelvic abscesses in which treatment was given following drainage of the culdesac, in a few days all traces of pelvic inflammation disappeared. Of twenty-three cases of pelvic abscesses in which treatment was given as a preoperative measure, in only three cases was subsequent drainage of the culdesac necessary because of persistent fluctuation. Holden and Gurnee's studies would indicate that all types of pelvic inflammation responded satisfactorily to this form of treatment. Graham¹⁴ and Jacobs, Vaughan and Gellhorn¹⁵ reported similar good results, particularly in gonorrheal salpingitis and pelvic infections following abortion.

8. Holden, F. C., and Gurnee, W. S.: The Elliott Treatment: A New Method of Applying Vaginal Heat, *Am. J. Obst. & Gynec.* 22: 87-96 (July) 1931.

9. Gellhorn, George: Nonoperative Treatment in Gynecology, New York, D. Appleton & Co., 1923.

10. Cherry, T. H.: The Results of Diathermy in Pelvic Infections, *J. A. M. A.* 86: 1745-1748 (June 5) 1926.

11. Scheffey, L. C., and Schmidt, W. H.: Diathermy as an Adjunct in the Treatment of Pelvic Inflammatory Disease, *Am. J. Obst. & Gynec.* 18: 230-239 (Aug.) 1929.

12. Bettman, R. B., and Crohn, N. N.: Diathermy in the Production of Deep Temperature, *J. A. M. A.* 88: 532-537 (Feb. 19) 1927.

13. Elliott, C. R., cited by Holden and Gurnee.⁸

14. Graham, H. F.: Elliott Treatment of Pelvic Inflammations, *Am. J. Surg.* 16: 423-426 (June) 1932.

15. Jacobs, R. G.; Vaughan, J. R., and Gellhorn, George: Preliminary Report of Pelvic Inflammatory Diseases Treated by the Elliott Method at the St. Louis City Hospital, *Bull. St. Louis M. Soc.*, June 5, 1931.

Holden and Sovak¹⁶ report that they found the Elliott method to be beneficial as a preoperative and as a postoperative measure in reconstruction of the oviducts following pelvic infections. From twelve to twenty-eight treatments were given three or four weeks before operation, which frequently reduced the magnitude of the operation and made the tissues more nearly normal in appearance. Some fallopian tubes that did not remain patent after the operation, as shown by the Rubin test within two or three days, would frequently become patent following the use of the Elliott treatment, as a result of the rapid absorption of exudate and increased vascularity of the tissues.

DATA CONCERNING FORTY-THREE CASES

More than a year ago, the Elliott method of treatment for inflammatory disease of the pelvis was introduced in the Mayo Clinic and has been used in almost all types of pelvic infection. In view of the fact that little has been said about the results of the method, especially when used postoperatively, it seemed advantageous not only to confine this report to a group which includes the results obtained in cases in which operation was performed and in cases in which operation was not performed, but to depict points in the surgical technic involved in some of the more difficult and often hazardous cases. This series of forty-three cases is, of course, not sufficient to justify positive statements in regard to treatment used as a routine, but some interesting facts have been observed and may be a distinct guide to future treatment. The age variation is particularly striking, as shown in the accompanying chart.¹⁷ Twenty-one patients (48.8 per cent) were between the ages of 20 and 29 years, thirteen (30.2 per cent) were between 30 and 39, and nine (20.9 per cent) were between 40 and 49. In 33.3 per cent of cases in the first age group inflammatory lesions of the pelvis had been present for a long time, and often the patients had been subjected to previous operations. In several cases uterine and ovarian tumors had developed, and immediate operation was advised; the operation was followed in from five to seven days by the Elliott method of treatment. In 66.7 per cent of cases in which ovarian or uterine tumors or fecal fistulas had not developed following previous operations on the pelvis, only the Elliott treatment was given. In the second and third age groups the patients were similarly selected. In 46.2 per cent of cases of the second age group, treatment was surgical, with the application of the Elliott treatments after operation, and in 53.8 per cent treatment was by the Elliott method only. In 66.7 per cent of the third age group the patients were operated on, and the Elliott treatments were given after operation, whereas 33.3 per cent of the patients were treated by the Elliott method only.

The results of treatment were designated as good, fair and poor. At the time of the patient's dismissal, if bimanual examination did not reveal tenderness, palpable masses or thickening of adnexa, the result was classified as good. If there was thickening of the adnexa and residual tenderness, graded 1 to 2, the result was considered fair. If there was no change or the patient was uncooperative, the result was considered poor.

Nineteen patients were operated on and received, on an average, twelve Elliott treatments during convalescence or before they were dismissed from observation. In sixteen cases (84.21 per cent) the results were good, and in three (15.79 per cent) they were fair. End results for the entire group were satisfactory in 100 per cent. The average date of dismissal after operation was on the fourteenth day. If further Elliott treatments were considered advisable they were given as ambulatory measures, the patients returning to the hospital only for one-hour periods of treatment.

There were twenty-four cases in the nonsurgical group, or in which the Elliott treatment only was used. The majority of these patients were permitted to remain at home and come to the hospital for one hour each day for the treatment. In a few cases in which the disability was not too severe, the patient was able to continue at work, and came to the hospital daily for the one-hour treatment. A small number of the more severely ill patients were in the hospital for about five to fourteen days, when they were either dismissed from observation or were permitted to live outside the hospital and continue their treatments daily as ambulatory patients. In fourteen of the twenty-four cases (58.33 per cent) the results were classified as good and the patients were free from symptoms of the disease; in three (12.5 per cent) the results were fair and in seven (29.17 per cent) they were poor. Considering the entire group of twenty-four cases, the results were satisfactory in 70.83 per cent.

Analysis of the seven cases in the nonsurgical group, in which the results were poor, revealed that in three cases the patients were poorly selected, as their complaints were unfortunately associated with conditions unrelated to the pelvic organs. Included in these was a case of Hunner's ulcer of the bladder in which sympathectomy of the presacral nerves was performed later; the second case was one of sacro-iliac arthritis in which pain was referred to the right adnexal region, and in the third case chronic right salpingo-oophoritis was present but was associated with arthritis. Following the Elliott treatment, the pelvic adnexal mass became reduced but continued to remain tender. Three months later, however, the patient became pregnant and was delivered of a living infant at term. The remaining four patients, on account of economic conditions, were unable to remain long enough to be benefited by the treatments. This is to be regretted, since the condition of each patient was such that she should have been freed from further symptoms of pelvic infection, and furthermore satisfactory results in the medical group might have been recorded as 87.5 per cent.

A comparison of the results in all three age groups reveals that the number of cases in which operation was required is practically constant throughout, but that whereas the percentage of cases in the fourth decade in which operation was performed is approximately equal to that in which operation was not performed, the percentages are exactly reversed in the third and fifth decades. It would seem, therefore, that there is a group of cases in which at the very beginning of the infection operation will be required, and that this group will remain fairly constant for a given number of years, but very careful treatment is required in order properly to divide the cases into their respective groups. Furthermore, the greatest number of inflammatory diseases of the pelvis occurs during the third decade, and the percentage incidence diminishes during the fourth and fifth decades.

16. Holden, F. C., and Sovak, F. W.: *Reconstruction of the Oviducts: An Improved Technic with Report of Cases*, *Am. J. Obst. & Gynec.* 24: 684-695 (Nov.) 1932.

17. To conserve space the chart has been omitted here. It will appear in the author's reprints.

SURGICAL CONSIDERATIONS

It has been said that the surgery for chronic inflammatory disease of the pelvis following conservative treatment should be reconstructive, which without question is true in many cases, especially in which plastic operations are to be performed on one or both tubes or in which partial resection of the ovaries is to be performed, together with freeing of pelvic adhesions when the uterus is held retroverted or retrocessed. Holden and Sovak have shown that plastic operations on the fallopian tubes are more successful if they are preceded by a course of Elliott treatments, and that some tubes known to be occluded two or three days after operation, as shown by the Rubin insufflation test, will subsequently reopen if the Elliott treatment is continued during convalescence. It is possible, therefore, that with wider application of the Elliott treatment and greater care in the selection of cases for treatment the number of patients with subacute and recurring chronic pelvic inflammatory disease requiring operation will be reduced still further.

Besides the group of cases in which reconstructive surgery can be applied, there is one group in which operation necessarily is eliminative as well as reconstructive; this includes the cases of the surgical group reported here. The disease in such cases usually follows a definite course: initial salpingo-oophoritis followed by a tubo-ovarian abscess and, in some cases, by perforation and drainage into the culdesac, rectum or sigmoid. Often the appendix is involved secondarily or the infection may be associated with ovarian cysts and dermoid and fibroid tumors. These patients belong definitely to the surgical group, but extreme care and judgment must be exercised in selecting the proper time for operation. Since operation is difficult, injury to the sigmoid, rectum and bladder may occur, owing to the edema and induration of their respective muscular walls, should the time for operation be misjudged. If a tubo-ovarian abscess perforates into the bowel, chronic cellulitis subsequently develops and will remain active for many months unless treatment is instituted at the onset.

When a tubo-ovarian abscess perforates into the sigmoid colon or when a fecal fistula occurs in the sigmoid colon postoperatively during the acute or subacute stage of pelvic inflammation, the morbidity is greatly increased. The difficulty encountered in the repair depends mainly on the situation in the bowel and the amount of pelvic peritonitis or residual cellulitis present. In one case a tubo-ovarian abscess had perforated into the sigmoid colon. In three cases it was found that postoperative fecal fistulas had developed in the sigmoid colon following operations elsewhere. In some cases, the pelvic infection was associated with hemorrhagic ovarian cysts and in others there were large uterine fibromyomas. Operations in such cases, even under the most favorable conditions, are always associated with a certain amount of trauma, postoperative inflammatory exudate, serum, and pelvic infection and often entail long convalescence and a high morbidity and mortality.

The Elliott principle of applying prolonged vaginal heat as a postoperative measure stimulates rapid absorption of the exudate, shortens the convalescence, reduces the morbidity and thereby contributes much to a successful surgical result. In this series, satisfactory results were obtained in 100 per cent of the cases, and the time required in the hospital was less than two weeks.

SUMMARY

A high percentage of chronic infections of the pelvis can be cured clinically by the prolonged and sustained application of heat to the vagina, the Elliott technic being used. It is apparent, however, that there is a fairly constant small percentage of cases of chronic infections of the pelvis in which operation will be required. Complications are often caused by lesions of other pelvic structures and intestines. Satisfactory results following operations in this group are best obtained by the use of the Elliott technic, usually beginning on the fifth day.

ABSTRACT OF DISCUSSION

DR. FRANCIS W. SOVAK, New York: Dr. Counsellor has presented an efficient and simple method of applying heat by way of the vagina in the treatment of chronic pelvic infections. At Bellevue we have markedly lowered our operative incidence in chronic pelvic infections since we began the use of the Elliott technic, and we feel that total ablation of the pelvic organs is poor gynecologic practice. After a few treatments there have been noted a feeling of well being, softening of the masses, and the approach to normal temperature; and after a full course of treatment, mobility of the uterus, freedom from symptoms, a normal menstrual cycle and lessened time of hospitalization. I would not attempt to operate for bilaterally occluded oviducts unless a series of Elliott treatments had been given previously. The tissues become less edematous and less friable, and adhesions disappear or are filamentary. I resume treatment after operation to insure patency. All foci of infection of gonorrheal origin must be cleared up without the use of antiseptic applications or douches. The vagina is dried before and after each treatment. I depend on the dilated blood vessels producing a local leukocytosis and exudation and on the general increased leukocytosis which has been proved to exist at an average of 17 per cent, the temperature of the urethra being 104 F. and of the cervix 106. At Bellevue the first thirty cases treated and reported by Holden and Gurnee cleared up symptomatically and bacteriologically after eighteen daily treatments to the cervix and twenty to the urethra. My experience in using the Elliott treatment postoperatively has been limited to my operations on the oviducts and in the treatment of shock. Excellent results have been obtained.

DR. CARL HENRY DAVIS, Milwaukee: A point which I believe should be emphasized is that treatment must be varied according to the nature of the infection. It also makes a great deal of difference as to whether or not one is taking care of a private patient or a patient seen in a charity service. My experience with conservative treatment in private practice is very satisfactory. On the other hand, in the county hospital type of patient it is most unsatisfactory because of the fact that the patient leaves the hospital, has a new infection within a short time, and keeps coming back until finally some type of pelvic surgery must be done. I wish that Dr. Counsellor would tell about the value of the Elliott treatment in the management of the postabortive patient with a frozen pelvis.

DR. VIRGIL S. COUNSELLER, Rochester, Minn.: Dr. Sovak places well deserved emphasis on the technic employed in this treatment and discusses the results as observed in the vagina and cervix; he also mentions the fact that the method is advisable as a preoperative measure. The results obtained by Dr. Sovak in plastic operations on the fallopian tubes, in which the Elliott treatment has been used as a postoperative measure, illustrate the value of the method. A physician must be careful when applying the treatment in cases in which abortion has occurred, as brought out by Dr. Davis. I do feel, however, that some very satisfactory results have been obtained in this group. The treatment is given slowly, usually starting with the temperature at 110 F. for half an hour, with gradual increase to 130 F. for one hour. If a reaction occurs, the treatment must be discontinued. It is important to distinguish between the postabortive and the gonococcal types of infection. The former type requires more prolonged treatment than the latter. Another important point brought out by Dr. Davis, which is

invariably true, concerns the patients in charity and county hospitals. It must be remembered that physicians of these hospitals have no control over the mode of life of these patients after they leave the hospital, and it is in this group that perhaps less conservative methods should be employed, and tissue actually extirpated.

OCULAR DISTURBANCES PRODUCED IN EXPERIMENTAL ANIMALS BY DIETARY CHANGES

CLINICAL IMPLICATIONS

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Investigators on nutrition have found that animal experimentation is necessary in carrying on their work. Much of the progress attained in this field was made possible by the use of small animals, particularly the albino rat. They reach their maturity and begin to breed at about 90 days of age, and they rarely live to be more than 3 years old. It has been calculated that each day of a rat's life is equivalent to thirty days of man's life. Thus it is possible to conduct experiments over a whole life span in a comparatively short time. The rat can be maintained in excellent nutritive condition on a synthetic, or rather an artificial, diet consisting of purified protein, fat, carbohydrate and inorganic salts, together with a supplement of the necessary vitamins.

In studying the physiologic effects of any given component of the diet, the biologist often proceeds by feeding the aforementioned diet lacking the one factor under consideration. With this method the test animals may then be minutely observed, anatomically and functionally. Further, if an assay of some food for its content of this factor is desired, graded doses may then be superimposed on the deficient diet. The tests may be either curative or prophylactic in purpose.

Mendel points out that the "law of minimum" has become so firmly established for nutrition that one expects that the need of any essential will impede growth in animals as well as in plants, in cases in which the power is lacking to synthesize *de novo* the missing factor. In the case of the vitamins, other more specific evidences of pathologic function have been discovered.

An example of this is the characteristic ophthalmia that is an almost unailing manifestation when the diet is lacking in vitamin A. This is a specific instance of a definite relation between a nutritional deficiency and resulting changes in the ocular tissues. It has also been pointed out that animals deprived of vitamin A have a poor adaptation to darkness after being exposed to the light.

Another example of the relation of a nutritional disturbance to changes in the eye is presented by the lack of some component of the vitamin B complex in the diet. For a number of years the water-soluble vitamin B was considered to be identical with the antineuritic vitamin discovered by Eijkman.¹ More recent work, however, has shown that this water-soluble vitamin is made up of several substances at least two of which are necessary in the rat for normal growth. One of

these, B (B₁), is relatively thermolabile and has antineuritic and growth-promoting properties; and the other vitamin, B₂ (G), is more stable after heating even under pressure and also possesses growth-promoting properties and functions in the prevention or cure of pellagra-like symptoms in the rat. Recently, it was shown by Day, Langston and O'Brien² that cataracts develop in young animals kept protractedly on this G-free diet.

The lack of certain essential inorganic salts in the diet also may bring about ocular changes. Some years ago, Osborne and Mendel³ investigated the influence of inorganic elements in nutrition by excluding, as far as possible, from the diets of different groups of rats, one or more of the following constituents—potassium, magnesium, calcium, sodium, chlorine and phosphorus. They found that the body cannot store any considerable amount of the mineral elements, so that if the diet is deficient in any of them over a sufficiently long period, the results of this shortage will necessarily be shown in the body of the animal sooner or later.

In the course of determining the smallest amounts of mineral elements necessary for the optimal growth of the albino rat, it was observed that many functional disorders were produced in the test animals under certain circumstances. With a diet low in inorganic salts, one of the observers noted a protrusion of the eyeball. The ocular phenomenon appeared regularly enough, so that it warrants recording.

Because of the frequency with which the ocular lesions have found their analogue in man, it is fitting that a brief review of the work done by my colleagues and me in this field be described. An attempt will be made to show the possible similarity between certain diseases in man and those in experimental animals subjected to known dietary deficiencies.

VITAMIN A

Animal Experiments.—Tests were designed to investigate the retina as a source of vitamin A. Young albino rats free from visible disease, varying in age from 21 to 30 days, and weighing from 45 to 50 Gm., were placed on a basal diet which was lacking vitamin A. This ration consisted of casein (extracted with alcohol and ether and then heated to 100 F. for twenty-four hours), 18 per cent; corn starch, 63 per cent; crisco, 15 per cent, and salt mixture (Osborne and Mendel^{3a}), 4 per cent. Vitamins B, D and G were provided by 400 mg. of irradiated yeast daily fed apart from the basal ration. Distilled water was freely available. The efficacy of the retina as a source of vitamin A was judged by: (1) cure or prevention of ophthalmia; (2) resumption or maintenance of increase in body weight, and (3) absence of renal and vesicular calculi and of abscesses at the base of the tongue and in the middle ear at autopsy.

The following ocular changes were observed in these rats: First, there was an increase of lacrimation, which was accompanied by photophobia. Frequently this change came on simultaneously with a loss of body weight. Then the eye normally prominent and protruding in this species, seemed to sink into its bony socket, and the animal appeared to dread the light.

2. Day, P. L.; Langston, W. C., and O'Brien, C. S.: Cataract and Other Ocular Changes in Vitamin Deficiency: Experimental Study on Albino Rats, *Am. J. Ophth.* 14: 1065 (Oct.) 1921.

3. Osborne, T. B., and Mendel, L. B.: The Inorganic Elements in Nutrition, *J. Biol. Chem.* 34: 137, 1918.

3a. Osborne, T. B., and Mendel, L. B.: Nutritive Value of the Whole Kernel and Its Milling Products, *J. Biol. Chem.* 37: 857 (April) 1919. The composition of Osborne and Mendel's salt mixture follows:

Calcium carbonate	12.9	Crack acid per water	1.0
Magnesium carbonate	2.5	Crystallized iron sulfate	1.0
Sodium carbonate	5.3	Potassium iodide	1.0
Potassium carbonate	1.0	Manganese sulfate	1.0
Phosphoric acid, U. S. P.	1.0	Sodium fluoride	1.0
Hydrochloric acid	5.5	Praseodym and cerium	1.0
Sulphuric acid	2.5	sulfate	1.0

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Read before the Section on Ophthalmology at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. Eijkman, C.: Eine Beri-Beri-ähnliche Krankheit der Hühner, *Virchows Arch. f. path. Anat.* 148: 523, 1897.

more and more.⁴ The lacrimal secretion changed from a watery to a viscid sanguineous-tinged secretion. A slight edema of the eyelids became manifest, and there was an accumulation of a dry secretion in the ocular culdesac. The lid hairs fell out, and the lids became matted together. With the progress of the ocular disturbance, the cornea appeared hazy, particularly about the periphery. Patches of secretion which were fatlike and yellowish extended onto the corneal surface from the fornices, even to the center of the cornea. The latter became dry, oily and lusterless, losing its normal transparency. When the plaques were removed from the cornea, the surface did not show any disturbance, and it would not stain with fluorescein. Later, the ocular lesion would go on to corneal ulceration, perforation and panophthalmitis if the animal did not succumb.

Treatment.—When the eye showed a definite ocular change, the retinal tissue of the hog or steer was added to the basal diet. Previous experiments⁵ showed that 50 mg. of dried retinal tissue restored normal growth and cured the ocular disturbance. It was estimated at this time that retinal tissue was equal in potency to good cod liver oil. A chemical examination of the retinal fat showed it to give certain colorimetric reactions exhibited by cod liver oil.

Comment.—Recently, von Euler and his co-workers⁶ and Moore⁷ amply demonstrated that small doses of the highly purified yellow pigment carotene suffice to cure rats that exhibit the symptoms of avitaminosis due to the lack of vitamin A. This observation immediately threw the experimental worker into confusion, for the question arose as to whether the substance previously fed was the alleged vitamin A or carotene. Several English workers⁸ examined their materials photospectrographically with the result that the following differentiation was made:

Carotene	Vitamin A of Liver Oils
Synthesized in the plant	Stored in the animal
Orange-red	Almost colorless
328 m μ absorption band absent	328 m μ absorption band present
Greenish-blue antimony trichloride reaction showing absorption at 590 m μ	Vivid blue antimony trichloride reaction showing absorption at 572 and 606 m μ

In order to determine whether the active agent in the retinal tissue is vitamin A or carotene, it was necessary to study the lipoidal content of the tissue. It is apparent from the preliminary data that the substance which maintains growth and prevents xerophthalmia may be the same as that found in cod liver oil.

It has been suggested by many observers that some sort of change in the structure of the retina and its pigment epithelium layer might be expected during the stage of ocular disturbance to account for the alleged hemeralopia. Early observations did not reveal any disturbance of the tissue after ocular manifestations

developed in the animal. Fridericia and Holm,⁹ however, called attention to the adhesion of the retina to the pigment layer in animals on a diet lacking vitamin A. My co-workers and I¹⁰ also observed changes in the choriocapillaris and pigment layers of the retina, but did not attempt to interpret them.

To what extent these results on rats are applicable to some human ocular disturbances remains to be established. For many years before the discovery of the vitamins, the belief was widely held that certain types of conjunctivitis occurring in children were of a dietary origin. Mori¹¹ made the important observation that the disease known as "hikan," prevalent among children in Japan and characterized by xerosis of the conjunctiva, could be prevented by giving various fish oils. Similarly, Ishihara¹² described numerous cases of night blindness in which cure was obtained by the administration of cod liver oil. They concluded that the cause of the condition was a deficiency of fat in the diet. Block¹³ and Monrad,¹⁴ studying the cases of conjunctivitis occurring in Danish children, also concluded that the disease was a dietary one. Block, while agreeing with Mori in believing that a fat deficiency was the main etiologic factor, suggested that a vitamin deficiency might be a contributory cause. Monrad, on the other hand, definitely inclined to the belief that a deficiency of accessory food factors was the cause.

It is suggested that night blindness is caused by a failure in the regeneration of the visual purple after its bleaching by strong light. Fridericia and Holm⁹ showed that rats deficient in vitamin A placed in the dark after exposure to light show a subnormal rate of regeneration of visual purple. These results have been confirmed by Tansley,¹⁵ who followed the course of regeneration of visual purple in normal rats and in rats deficient in vitamin A. She notes, however, that if the animals are well depleted of vitamin A, it takes longer for the visual purple to regenerate.

A review of the classic work on visual purple establishes the following facts that have remained to the present time almost unchallenged. The rods of the retina possess the substance known as visual purple, and the color of visual purple varies in different animals and under different circumstances. Under light stimulation, visual purple is bleached and becomes converted into a substance called visual yellow, which in turn by photochemical action is further changed into visual white. Visual purple will regenerate itself if the animal is kept in the dark and if the retinal tissue is not separated from the pigment layer. Hering¹⁶ pointed out that visual purple may not be absent from the cones, particularly those of the human foveal area.

Edridge-Green¹⁷ held that the visual purple is the sole visual substance and is the essential feature in the

4. Holm (Am. J. Physiol. 73: 79, 1926) describes the inability of the rat at this stage to become adapted to the dark after being exposed to the bright light. This observation has been corroborated by Sugita (Arch. f. Ophth. 116: 653, 1925) and Tansley (J. Physiol. 71: 442, 1931); they propose the term night blindness or hemeralopia for this disturbance. Tansley further notes that dark adaptation becomes poorer as the animal is continued on the basal diet.

5. Yudkin, A. M.; Kriss, Max, and Smith, A. H.: Vitamin A Potency of Retinal Tissue, Am. J. Physiol. 97: 611 (July) 1931.

6. von Euler, B.; von Euler, H., and Karrer, P.: Beobachtungen an Epiphyphen und an Leberextrakten von Ratten nach Carotinoidfütterung, Biochem. Ztschr. 209: 240, 1929. von Euler, B.; von Euler, H., and Hellström, H.: A-Vitaminwirkungen der Lipochrome, *ibid.* 203: 370, 1928.

7. Moore, T.: Vitamin A and Carotene: Association of Vitamin A Activity with Carotene in Carrot Roots, Biochem. J. 23: 803, 1929; Vitamin A and Carotene: Vitamin A Activity of Red Palm Oil Carotene: Absence of Various Dietary Modifications upon Vitamin A Activity of Carotene, *ibid.* 23: 1267, 1929.

8. Gillam, A. E.; Heilbron, I. M.; Hilditch, T. P., and Morton, R. A.: Spectrographic Data on Natural Fats and Their Fatty Acids in Relation to Vitamin A, Biochem. J. 25: 30, 1931.

9. Fridericia, L. S., and Holm, E.: Experimental Contribution to the Study of the Relation Between Night Blindness and Malnutrition: Influence of Deficiency of Fat-Soluble A Vitamin in the Diet on the Visual Purple in the Eye of Rats, Am. J. Physiol. 73: 63, 1925.

10. Smith, A. H.; Yudkin, A. M.; Kriss, Max, and Zimmerman, H. M.: Vitamin A Content of Retinal and Choroidal Tissue, J. Biol. Chem. 92: xcii-xciii (June) 1931.

11. Mori, M.: Ueber den sogenannten Hikan (Xerosis Conjunctivae infantum eventuell Keratomalacie), Jahrb. f. Kinderh. 59: 175, 1904.

12. Ishihara, S.: Zur Aetiologie der idiopathischen Hemeralopie bzw. Xerosis Conjunctivae, Klin. Monatsbl. f. Augenhe. 15: 596, 1913.

13. Block, C. E.: Clinical Investigation of Xerophthalmia and Dystrophy in Infants and Young Children, J. Hyg. 19: 283 (Jan.) 1921.

14. Monrad, S.: Alimentary Gastro-Enteritis and Xerophthalmia, Ugesk. f. læger 79: 1177 (July 19) 1917.

15. Tansley, Katharine: Regeneration of Visual Purple, J. Physiol. 71: 442 (April) 1931.

16. Hering, cited by Parsons, J. H.: An Introduction to the Study of Color Vision, London, Cambridge University Press, 1915.

17. Edridge-Green, F. W.: Ophthalmology and Theory of Vision, Brit. J. Ophth. 1: 423 (July) 1917.

retina which enables it to transform light into visual impulses. He believes that it is liberated from the rods and stimulates the cones. These facts would seem to indicate the existence of a continual intercourse between the pigment epithelium and the rods.

CLINICAL STUDY

With the foregoing observations before us, my co-workers and I studied nine cases of toxic amblyopia and two of retinitis pigmentosa in man to determine whether the ingestion and the parenteral injection of vitamin A would have an effect on the course of the disease. Simultaneously, five new cases of phlyctenular keratoconjunctivitis and three of old standing, having an acute exacerbation, were studied in a similar manner. The following progress was noted: A typical history of one of the cases of toxic amblyopia, having alcohol and tobacco as causative agents, will suffice as an example of the disturbance. The patient usually complained of a fogging of his visual acuity and was unable to carry on close work, even though the refractive error was corrected. The vision apparently was getting worse. An examination revealed that the visual acuity was usually less than 20/200 in both eyes; the pupils reacted to light and in accommodation fairly well. The peripheral field for form was within normal limits; that of color, slightly contracted. There was a definite relative scotoma for white, and frequently it was paracentral. There was a definite central scotoma for red and green. In two of the cases the nasal loss of color value was more marked than the temporal area surrounding the point of fixation. The fundus examination as a rule did not reveal any pathologic changes. In one case, however, the lower temporal quadrant appeared paler than the rest of the nerve.

All the patients received a thorough physical examination. The condition in one was complicated by active diabetes; another presented an infection of the ethmoidal cells. The remainder appeared to be healthy persons. In all of them there was a definite history of moderate use of alcohol and tobacco. Three of them indulged in cheap whisky over a period of from one to five months. They were given a standard preparation of cod liver oil three times daily before meals "on an empty stomach," and five of them were given injections of 4,000 U. S. P. units of vitamin A concentrate intramuscularly twice weekly. Four of the patients recovered vision better than 20/40 within three months after treatment. The other five are still under treatment and are showing improvement of their visual acuity.

It is a known fact that improvement has occurred in typical cases of toxic amblyopia over a period of six months or more when alcohol and tobacco are discontinued and a good diet is adhered to. Nevertheless, it appears that the period of recuperation can be shortened by the addition of vitamin A to the diet. The patient can use some tobacco but no alcohol and still improve over a shorter period than by the usual method prescribed by the ophthalmologists in the past. It is significant that there may be some relation between the repair of the neuro-epithelial layer and the utilization of vitamin A. This observation should also change the conception of toxic amblyopia in that retrobulbar neuritis is a misnomer for this lesion and that it should be considered as an ascending neuritis. The essential lesion is referable to the outer layer of the retina.

VITAMIN B₂ (G)

Many attempts have been made to link the formation of cataracts with disturbances of diet and intestinal disorders. Recently, Day, Langston and O'Brien¹⁸ reported the formation of cataracts in young animals on a diet deficient in vitamin G. Curtis, Hauge and Kraybill¹⁸ also recorded a similar lenticular disturbance produced in young animals on a diet assumed to be low in the amino-acid tryptophan. Jackson, in the department of physiologic chemistry at Yale University, likewise observed similar changes in a few of the animals that he had on an experimental diet deficient in tryptophan. This observation was not recorded, because it was thought that the relation between the tryptophan deficiency and the occurrence of cataract was not sufficiently established. Through the courtesy of Cowgill and Burack, I examined dogs fed on a diet free of vitamin G, but was unable to detect any ocular disturbance. Prompted by the observations of Day, Langston and O'Brien, Guida and I¹⁹ repeated the work.

Animal Experiments.—Twelve young healthy rats free from congenital ocular defects were used. The experiment was started when they were 21 days old and each weighed about 40 Gm. The basal diet was as follows: casein (washed with 60 per cent alcohol), 18 per cent; Osborne and Mendel's salt mixture, 4 per cent; butter fat, 8 per cent; cod liver oil, 2 per cent, and corn starch, containing the alcoholic extract of rice polishings, 68 per cent.

Two control animals received an addition of 400 mg. of yeast to supply vitamins B and G to the diet.

At the end of ten weeks, eight animals remained on the experiment; two were in fair nutritional health, and six were in poor condition. The latter were unable to care for their fur. Their bodies were literally covered with lice; the lids were swollen and congested and glued together with an exudate. Lenticular changes were noted in all of them. The opacities were not confined to any special area of the lens. It is worthy of note that the changes in the lens developed completely within a period of seven days.

The missing vitamin factor was promptly supplied to one of the animals when the opacity of the lens was first noted. At the end of three weeks all signs of cataracts had disappeared in this animal. The remaining five in which the lenticular change was allowed to complete itself resumed their normal growth and maintained health when yeast was supplied but the cataracts were still present.

The experiment was repeated on another series of older animals that were stunted in their growth for sixty days by supplying them only small amounts of yeast. They have been on the diet now for twelve weeks, but no changes in the eyes have been noted. Another group of rats fed on a more highly purified diet than that suggested by Day, without addition of yeast, died before any lenticular changes were manifest.

Comment.—Vitamin G deficiency has been considered by many workers as intimately associated with the complex syndromes of symptoms included under the term pellagra. As yet it is not possible to say definitely that the pellagra-like condition in the rat is the analogue of pellagra in man. The incidence of cataracts is not any more prevalent in pellagra than in any other type of disease. It is significant, however, that cataracts should develop in animals that are on a diet deficient in the so-called pellagra-preventing vitamin G. The question arises whether observations on the albino rat can be interpreted in terms of human lenticular dis-

18. Curtis, P. B.; Hauge, S. M., and Kraybill, H. R.: Nutritive Value of Certain Animal Protein Concentrates, *J. Nutrition* 5: 503 (Sept.) 1932.

19. Yudkin, A. M., and Guida, F.: Unpublished experiments.

turbances. It is possible that the so-called congenital cataracts may be produced within the uterus by a maternal diet deficient in vitamin G. An attempt will be made to produce congenital cataracts by a vitamin G deficiency in the mother. It is not far fetched to consider some types of cataract in man to be formed because of the lack of proper assimilation of certain food substances from the intestinal tract that are necessary for the maintenance of the normal metabolism of the lens. At the present stage of our knowledge, we are not justified in attributing the formation of cataracts to the lack of vitamin G alone in the diet. It is possible, however, that the lack of vitamin G in the diet alters the intestinal tract so that the body is unable to furnish the lens with its proper pabulum. Further evidence of a more exacting character is necessary to establish the apparent association of a deficiency in vitamin G and cataract formation.

DIETS POOR IN MINERAL NUTRIENTS

It has been suggested that glaucoma simplex may be due to a low intake of mineral nutrients. No experimental evidence, however, is available to substantiate this view. There are some recorded data that the sodium chloride content of the blood in patients afflicted with glaucoma simplex is below normal. A study that was made in the clinic on the chemistry of the blood in glaucoma simplex is rather suggestive of this point of view, but not enough material is available to make a definite statement to this effect. With these notions as a background, an attempt was made to establish the relationship of a low salt intake to increased intra-ocular pressure. However, instead of finding glaucoma simplex in this type of dietary deficiency, a picture of proptosis was noted in the following experiments:

Animal Experiments.—Young healthy albino rats 21 days old and weighing about 40 Gm. were placed on the following diet: casein, 18 per cent; butter fat, 9 per cent; lard, 20 per cent; starch, 44.2 per cent; yeast, 8 per cent; cod liver oil, 10 drops; distilled water; iodine in water once weekly; Sure's salt mixture^{19a} plus sodium chloride, 0.78 per cent, or McCollum's salt mixture,^{19b} 0.5 per cent.

In the course of sixty days it was noted that in about half of the animals prominent protruding eyes developed in which the degree of proptosis changed from day to day. The animals did not grow well, and roentgenograms showed the absence of normal mineral deposition in the bones. There was a definite anemia present. The animals showed marked nervousness and irritability. Several of them chewed up their tails while on this experiment. At the end of sixty days the missing mineral nutrients were added to the diet, whereupon the animals resumed their growth and returned to good health.

Histopathologic changes described by Naffziger²⁰ in exophthalmos were not observed in the ocular muscles of these experimental animals. Further study of the tissue is being

made by a pathologist. There are, however, suggestive changes in the thyroid gland that require a more detailed study and interpretation.

Comment.—I am convinced that glaucoma simplex is not produced by a diet such as has been recorded and is being studied in detail at the Connecticut Agricultural Experiment Station. There is evidence, however, that a condition is being dealt with which might lead to a better understanding of the relation of a diminution of inorganic salts in the diet to the exophthalmos in thyrotoxicosis.

SUMMARY AND CONCLUSION

The foregoing experiments on test animals fed faulty diets show that normal growth and maintenance of good health is interfered with if the experiment is allowed to go beyond the stage where the body is depleted of the essential factor. In addition, a large percentage of the animals on these diets show definite types of ophthalmic lesions produced by changes in the ocular tissue. For example, on a diet lacking vitamin A the secretion of the para-ocular glands is altered to the extent that the epithelium of the conjunctiva and cornea is changed so that destruction of the tissue follows if the missing factor is not added to the diet. Accompanying the external ocular lesion, there seems to be a disturbance of the pigment and the neuro-epithelial layer of the retina, for the animals have a poor dark adaptation. An examination of the tissue in question also bears out this contention.

In the literature are many case reports of persons with similar ocular disturbances who have been cured by taking cod liver oil internally. Clinical experience leads me to believe that diseases of the retina involving the pigment and neuro-epithelial layers are benefited by the introduction of an added amount of vitamin A or its precursor to a well balanced diet. Persons with toxic amblyopia with alcohol and tobacco as causative agents have a shorter period of convalescence; children suffering from photophobia accompanying phlyctenular keratoconjunctivitis regain their ability to face the light much sooner than when ocular medication alone is used; there is also a suggestion that retinitis pigmentosa may also be stayed. Hence, it is worth while studying the effects of vitamin A or its precursor on changes in the outer layer of the retina.

As for the production of lenticular changes when the diet is deficient in vitamin G, further work is required before definitely deciding on the causative agent. Even though the work of Day, Langston and O'Brien has been confirmed by Guida and myself on young animals, a more detailed scrutiny of the diet must be made, particularly in reference to the source of vitamin G.

So far changes in the lens have not developed in older animals that have been stunted in their growth by the lack of B and B₂, even after the animals have been on the diet for three months. It is possible that the intestinal tract of the animals on this diet has been altered to the extent that the necessary substances for normal growth and maintenance of health are not absorbed properly, hence the metabolism of the special organs is interfered with or a toxic substance is introduced into the blood stream. This may act like naphthalin and other poisons in the formation of experimental cataracts. As yet no definite connection has been detected between the dietary disturbances and so-called senile cataract, with the exception of the changes that appear in persons with diabetes. The

19a. Sure, B.: Dietary Requirements for Reproduction: Nutritive Value of Milk Proteins from the Standpoint of Reproduction, J. Biol. Chem. 58: 681 (Jan.) 1924. Sure's salt mixture consists of the following:

	Gm.		Gm.
Sodium chloride.....	0.2022	Dipotassium hydrogen phosphate.....	1.1158
Anhydrous magnesium sulphate.....	0.3117	Crystallized calcium hydrophosphate.....	1.1165
Crystallized disodium hydrogen phosphate.....	0.5265	Calcium lactate.....	0.2896
		Ferric citrate.....	0.1385

19b. McCollum, E. V.; Rask, O. S., and Becker, J. E.: Study of the Possible Role of Aluminum Compounds in Animal and Plant Physiology, J. Biol. Chem. 77: 753 (May) 1928. McCollum's salt mixture has the following composition:

	Gm.		Gm.
Sodium chloride.....	146.0	Tetrahydrogen calcium orthophosphate plus water.....	456.0
Anhydrous magnesium sulphate.....	225.0	Ferric citrate.....	100.0
Sodium-biphosphate, U. S. P. with water.....	293.0	Calcium lactate.....	1,098.5

20. Naffziger, H. D.: Pathologic Changes in the Orbit in Progressive Phthalamus: With Special Reference to Alterations in the Extra-Ocular Muscles and the Optic Disks, Arch. Ophth. 9: 1 (Jan.) 1933.

latter alteration of the lens is attributed to repeated changes in the osmotic pressures in the blood and aqueous humor or to the introduction of some unknown substance into the pabulum of the eye which disorganizes the normal metabolism of the lens. It is conceivable that congenital cataracts may come on if the mother is not adequately nourished during pregnancy. Further investigation along similar lines is necessary before a definite understanding of the causation of experimental cataract due to the lack of certain elements in the diet is fully understood.

In the instance of producing prominent eyes in experimental animals on a diet low in salts, a more intricate syndrome is presented.

ABSTRACT OF DISCUSSION

DR. C. S. O'BRIEN, Iowa City: Certain of the symptoms of both vitamin A and vitamin G deficiency are similar; e. g., loss of hair about the lids, edema, serosanguineous secretion from the conjunctival sac, matting together of the lids, and corneal changes. The corneal changes are not exactly alike in that with vitamin A deficiency the corneal surface is dry, oily, covered with fatlike plaques, and may ulcerate, whereas, in vitamin G deficiency most of the pathologic conditions are situated in the anterior stroma layers, and ulceration does not occur. Dr. P. C. Jeans of the University of Iowa has recently made a study of vitamin A deficiency in children. He believes that night blindness is the earliest subjective symptom of vitamin A deficiency. He studied the phenomena of dark adaptation with the photometer. Approximately 10 per cent of the children admitted to the hospital had a mild vitamin A deficiency, as shown by retarded adaptation to darkness. In practically all these cases the hemeralopia soon disappeared after the addition of cod liver oil to the diet. I had not thought of increasing the vitamin A content of the diet as a means of treatment in toxic amblyopia. Most of these patients improve rapidly after complete abstinence from tobacco and alcohol. Dr. Yudkin states that the pathologic changes are situated in the outer layers of the retina. I had believed them to be in the ganglion cell and nerve fiber layers. It pleases me to know that the work of Day, Langston and myself, on changes in the lens with vitamin G deficiency, has been confirmed at Yale. Dr. Yudkin has not mentioned the corneal changes; they resemble an anteriorly placed interstitial keratitis. Contrary to the experience of the author, we were unable to note any clearing of the lens on feeding vitamin G; however, the progress of the process could be stopped at any point by such means. Whether or not the observations on vitamin G deficiency in animals can be interpreted in terms of human lenticular disturbances, I am unable to say. It seems reasonable to think that some congenital cataracts may be the result of such a deficiency. I have thought that perhaps the lens changes in natives of India may be due to some such cause. These people live on starvation rations and the cataracts appear much earlier in life than in our own people.

DR. K. W. COSGROVE, Little Rock, Ark.: I wish to discuss the eye changes in vitamin G (B_2) deficiency. The original work of Day, Langston and O'Brien has been confirmed in experimental animals. It can be taken as proved that animals on a vitamin G deficiency diet will show changes in the lens. In an attempt to show a relationship between vitamin G and the lens changes in so-called senile cataract, fifty patients have been carefully questioned regarding their intake of foods known to be rich in vitamin G. The patients selected had no systemic or local known cause of cataract, such as trauma or diabetes. The average age was 72. Five foods (milk, greens, meat, liver and yeast) were taken as containing the majority of vitamin G in the diet. A study of these fifty patients showed that thirty-two, or 64 per cent, were apparently getting very little vitamin G; seventeen, or 34 per cent, were getting a moderate amount. There were three interesting instances of apparent arrest of cataract following the addition of food rich in vitamin G to their diet. Two of these had remained arrested for two and five years, respectively, following the addition of

a large quantity of milk daily, and one was arrested for eighteen months following the addition of a mixture containing liver extract. A study of 125 inmates of the Arkansas Confederate Home for the past six years showed that no person on the balanced diet has developed cataracts to maturity. We have several new ones come to the home every year with early opacities of the lens, but only one of these in six years has come to maturity. Although this preliminary report is small, and no definite statement can be made as to the etiology of senile cataract, several facts are suggested: 1. The majority of the patients with cataract who were studied ate only small amounts of food rich in vitamin G. 2. Persons of similar age on a balanced diet did not develop cataract to maturity in six years.

DR. PAUL L. DAY, Little Rock, Ark.: It can be said that cataract results from a deficiency of vitamin G (B_2). That the cataract is due to a deficiency of a heat-stable vitamin is proved by the fact that these experimental cataracts may be prevented or arrested by autoclaved yeast. It is reasonable to suppose that a deficiency of vitamin G would produce a cataract in human subjects. All species that we have experimented with, from fowls to primates, have responded in that way, and if man did not he would appear to be the exception. It might be argued that no human dietaries would ever be free enough of the vitamin to produce cataract. If the requirement of man were relatively as low as the rat requirement, that would be true. Until more is known about the human requirement for the vitamin, the question cannot be answered. It is known that different species vary widely in the amount of vitamin G necessary to prevent cataract. A very small amount will prevent it in the rat, while chicks will develop cataract even with large amounts of vitamin in the diet. Vitamin G therapy might well be used in incipient cataract cases. It would do no harm, and it would greatly benefit the patient in other ways. I should like to offer a word of caution with respect to the interpretation of clinical observations. Vitamin G can reasonably be expected to be of value in the treatment only if the cataract is due to a deficiency of the vitamin. There may be several causes of senile cataract; in that case one should expect arrest only in such cases as are due to a vitamin deficiency. If the nutritional history of a patient suggests that a dietary deficiency could not be an etiologic factor, such vitamin therapy would be useless.

DR. LAURA A. LANE, Minneapolis: One must be careful in interpreting observations in animals and applying them to human beings. In many instances, animals do not live under the same conditions or eat the same food as human beings. For example, work has been done on feeding rabbits high fat or high protein diets. High blood pressure and vascular changes resulted. The rabbit is not a carnivorous animal; therefore proper conclusions cannot be drawn. In the same way, while vitamin A and B are important factors, there are other elements in the diet, such as the mineral salts; and the body metabolism must be considered. McCollum, Simonds and Becker have shown in addition to the lack of vitamin A that the lack of vitamin B and an unfavorable salt mixture can cause ophthalmia. The practical clinical points are what must be worked toward now. Accurate records of patients must be kept. Physicians must try to put the knowledge that is now coming from the enormous literature—particularly in biochemical articles—to some practical use in daily work. Many patients today are on limited diets; a little extra strain or an infection upsets them and troublesome eye symptoms appear. I have had experience with vitamin A and B in retinitis pigmentosa as well as in patients who complain of their eyes tiring easily. The symptoms of such patients are improved from an increased amount of food containing vitamin B and A, such as liver, plenty of green vegetables and a rather high fat diet of cream. Vitamin B has a good effect on the intestinal tract. It increases peristalsis. This is desirable in many eye cases. Vitamin B has a good effect on the proteins. Nelson has shown that it mitigates the ill effects of a high protein diet. The problem of the vitamins is highly complex and requires much more clinical and experimental work.

DR. ARTHUR M. YUDKIN, New Haven, Conn.: It is true, as Dr. Lane points out, that many of the ocular changes produced in animals on diets deficient in vitamins have no analogue

in man. Nevertheless, the therapy that I propose is not harmful to the patient. I am aware that diet alone may not cure the ocular disease directly, but it is a known fact that a well balanced diet supplemented by the vitamins enriches the body by way of the intestinal tract, so that an injured organ can better defend itself. Recently Dr. Adams and her collaborators showed that naphthaline cataracts were produced much sooner in rabbits fed on a diet of oats and carrots than on one supplemented with cabbage. Today it is known that cabbage is rich in vitamin G. Is it not possible that the addition of vitamin G delayed the formation of cataracts in these rabbits fed naphthaline?

IMPROVEMENT IN EXPERIMENTAL DIABETES FOLLOWING THE ADMINISTRATION OF AMNIOTIN

B. O. BARNES, PH.D.

J. F. REGAN, PH.D.

AND

W. O. NELSON, PH.D.

CHICAGO

Houssay and Biasotti¹ clearly demonstrated that, if the hypophysis was previously removed, the glycosuria following complete pancreatectomy was markedly diminished. These animals with both glands removed excreted only from 0.05 to 0.89 Gm. of dextrose per kilogram a day, while controls with the pituitary intact excreted from 2 to 4 Gm. per kilogram after the pancreas was removed. Furthermore, the animals survived much longer than pancreatectomized animals. We confirmed some of these observations in an earlier report.² Although it would not seem desirable to remove the hypophysis for the treatment of diabetes, the possibility exists that the excretion of the gland might be suppressed and the diabetes improved. We shall report the details of an attempt to suppress the pituitary in pancreatectomized dogs.³

Considerable evidence has appeared to indicate that administration of estrogenic substance may suppress the sex principle in the pituitary. It was our intention to see whether the postulated diabetic principle in the pituitary might likewise be suppressed. The attempt apparently has been successful, but it is necessary to issue a warning against the clinical application until more of the effects of the sex hormone are investigated.

RESULTS OF EXPERIMENTS

Amniotin was used as a source of the estrogenic substance, since it was available in oil solution, which should give a slower, more uniform absorption. Four female dogs weighing about 10 Kg. were injected subcutaneously daily with 200 rat units of amniotin. In three of these animals, the injections were carried out for three weeks prior to extirpation of the pancreas, while in the fourth the pancreas was removed first. The urines were collected in a bottle to which toluene was added as a preservative. The twenty-four hour specimens were analyzed for dextrose by Benedict's method.

After removal of the pancreas in the three animals receiving amniotin, the wounds healed promptly, the animals lost some weight but the glycosuria was only mild. The maximum glycosuria in one animal while receiving 500 Gm. of meat was 1.5 Gm. per kilogram.

This dog lost her appetite and died three weeks after pancreatectomy. No pancreatic tissue was found at autopsy, although no histologic work was done. The other two animals showed less glycosuria and fell within the range that Houssay reports for completely hypophysectomized dogs. They both lost some weight but at the end of three weeks were lively and ate their diet of 500 Gm. of meat daily. All the animals received 50 cc. of dog's pancreatic juice⁴ on alternate days by stomach tube to aid digestion. During this period the injection of amniotin was continued, but at the end of three weeks the injections were stopped. Both animals developed a severe glycosuria in a few days, one excreting 3 Gm. per kilogram while the other excreted 4 Gm. per kilogram, the upper limit for pancreatectomized dogs in Houssay's controls. Our controls agree with his report. When severe glycosuria developed in these animals on the withdrawal of amniotin, it seemed clear that the pancreatectomy had been complete and that amniotin had influenced carbohydrate metabolism.

The next point investigated was whether amniotin could reduce glycosuria if the pancreas was removed first. Another animal was pancreatectomized and the glycosuria found to be 3 Gm. per kilogram. This animal and the two referred to previously were put on 20 units of insulin daily and a diet of 500 Gm. of meat plus enough bread to produce a daily glycosuria of from 10 to 12 Gm. When they were well standardized (for ten days), the injection of amniotin (200 rat units daily to each) was started. The glycosuria soon diminished and insulin and bread were withdrawn from one dog on the eighth day and from a second dog on the ninth day after amniotin was started. These two dogs were the ones previously used. They are both alive now, thirteen days after insulin was stopped and, although they are excreting a little more sugar than when they previously received amniotin, their glycosuria is only one-half to one-third what it was when they received no amniotin on the same diet. The third animal's glycosuria has been entirely abolished on the same diet and insulin dosage, which previously gave a glycosuria of from 10 to 12 Gm. These results clearly show that pancreatic glycosuria can be markedly influenced by the injection of amniotin and that the life of the pancreatectomized animal is prolonged.

A fifth animal was injected with anterior pituitary-like principle from pregnancy urine⁵ (0.5 cc. twice daily) for three weeks prior to pancreatectomy (the theory in this case being that the corpora lutea might suppress the pituitary). After removal of the pancreas, the glycosuria reached only 0.70 Gm. per kilogram, which is within the range for completely hypophysectomized dogs in Houssay's series. A severe infection developed at the site of injection, and the animal was killed on the tenth day after pancreatectomy. No residual pancreatic tissue was found.

COMMENT

Although these experiments clearly show that amniotin will modify glycosuria after removal of the pancreas, the explanation is not so clear. Tentatively, the theory is advanced that the pituitary has been suppressed, since the estrogenic substance has been found to suppress the sex principle in the pituitary. If this interpretation is correct, it would indicate that the suppression is almost complete, since the glycosuria

From the Department of Physiology of the University of Chicago.
Dr. Barnes and Dr. Regan are National Research Council fellows.
1. *J. Biol. Chem.* 101: 511 (Nov.-Dec.) 1931.
2. *J. Biol. Chem.* 101: 511 (Nov.-Dec.) 1931.
3. *J. Biol. Chem.* 101: 511 (Nov.-Dec.) 1931.
4. We are indebted to Dr. L. R. Dragstedt for this pancreatic juice.
5. Dr. Oliver Kamm furnished this.

following pancreatectomy was within the range for completely hypophysectomized dogs. It might be dangerous to suppress the pituitary completely, since other organs atrophy following hypophysectomy. This is especially true of the suprarenal cortex, which atrophies if the pituitary is removed. Before attempting to treat clinical diabetes by pituitary suppression, it will be necessary to determine whether the influence on carbohydrate metabolism can be accomplished without serious injury to other organs. This work is now under way and, until the studies are complete, the clinician is advised not to try suppression therapy on his patients.

SUMMARY

1. By injecting amniotin into depancreatized dogs, the glycosuria can be markedly reduced.
2. The animal's wounds heal promptly and life is prolonged, although a gradual loss in weight occurs.
3. A possible explanation is that the pituitary has been suppressed.
4. The clinician is advised not to try this therapy until further studies are made, since the suprarenal cortex may atrophy.

Clinical Notes, Suggestions and New Instruments

PARTIAL PROLAPSE OF THE CECUM, ILEUM AND APPENDIX THROUGH A PREFORMED OPENING IN THE GREATER OMENTUM

ANTONIO GENTILE, M.D., NEWPORT NEWS, VA.

Prolapse of the small intestine through a preformed opening in the greater omentum is an infrequent occurrence. According to the literature, herniation of the large intestine through such an abnormal opening is an extremely rare finding at operation. Including his own, Martzloff¹ found in the literature only sixteen cases of preformed greater omental apertures through which an intestinal loop had prolapsed. In only one of the sixteen was the large intestine the portion of bowel involved. This case, originally reported by Gorski,² was included by Martzloff only after some hesitation because of the belief that the opening in the omentum was of inflammatory origin rather than a simple tear. The rareness of the occurrence seems to justify recording this case, which is believed to be the seventeenth of its kind.

REPORT OF CASE

History.—M. L. F., a Negro girl, aged 14 years, was brought to the University of Virginia Hospital, May 19, 1929. She complained of pain in her abdomen of ten days' duration. May 10, she was seized by a pain in the epigastrium, had a chill, became nauseated and vomited. The pain shifted soon to the right lower quadrant of the abdomen. In twenty-four hours, however, she had improved, having taken a purgative in the meantime. The pain subsided to a dull ache only to return after a week with added severity and much nausea and vomiting. Her family physician was called and sent her to the hospital because he suspected acute appendicitis.

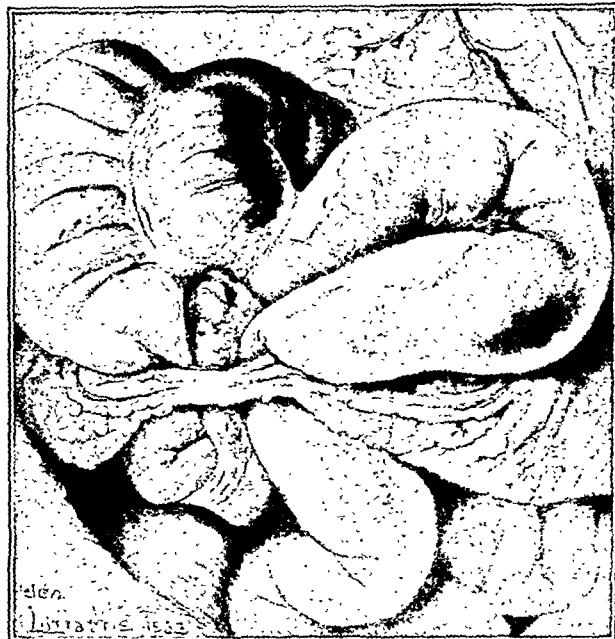
The family history was unimportant. The past history indicated that she had been a healthy child, having had no serious illnesses or operations. Her menses had commenced two months previously. The patient was unmarried.

Examination.—She was fully developed and well nourished, with a dry skin and an anxious look on her face. Her temperature was 99.6 F., the pulse rate 100, and the respiratory rate 24 per minute. The systolic blood pressure was 115, the

diastolic 88 mm. of mercury. The eyes, ears, nose and throat were normal. The teeth were carious and dirty. No glands were palpable. The heart and lungs were apparently normal. The abdomen, which was scaphoid, was rigid throughout. There was marked tenderness in the right lower quadrant at McBurney's point. No mass could be demonstrated. The flanks were tympanitic. The pelvic examination revealed extreme tenderness high up in the right fornix with suggestive evidence of a mass. The patellar and other reflexes were normal.

The urine contained an occasional white blood cell but was otherwise normal. The hemoglobin was 90 per cent (Dare); the red blood cells numbered 4,260,000 and the leukocytes, 11,000. The differential count made from a blood smear showed 87 per cent polymorphonuclear leukocytes, 12 per cent lymphocytes and 1 per cent basophilic leukocytes. The Wassermann reaction was negative. The stool contained no blood.

A diagnosis of probable acute appendicitis with rupture and localized peritonitis was made and operation advised.



Partial prolapse of cecum, ileum and appendix through a preformed opening in the omentum.

Operation.—Under nitrous oxide, oxygen and ether anesthesia, the patient's abdomen was entered through a low right rectus incision, the muscle being split. As the peritoneal cavity was opened, a small amount of blood-tinged, cloudy fluid escaped. Two loops of intestine, which were congested and discolored, presented themselves. They were covered by a deeply congested omentum and had the appearance of an obstructed bowel. On further examination an oval, smooth opening in the greater omentum, about 3 by 2 cm., was found between two large vessels, situated about 5 or 6 cm., from the lower margin of the omentum on the right side. Through this opening, parts of the cecum, the distal portion of the ileum and the appendix had prolapsed and were constricted by the surrounding omental ring, as shown in the illustration. The appendix, constricted by the ring in its midportion, presented the picture of acute inflammation with a gangrenous, discolored tip covered with fibrin and adherent to the cecum. The hernia had almost completely obstructed the bowel and had caused distention, dark red discoloration and edema but no gangrene. There were some plaques of fibrin scattered over the serosa of the intestine both above and below the aperture. There was also some distention of the ileum behind the point of obstruction. As soon as the omental ring had been divided and the incarcerated bowel freed, the dark red of the intestine disappeared and the normal color returned. Application of moist heat was followed by the resumption of peristalsis. The portion of omentum, which had acted as the constricting band, was

From the Department of Surgery and Gynecology, University of Virginia Department of Medicine.

1. Martzloff, K. H.: *Prolapse of the Intestine Through a Preformed Opening in the Great Omentum*, Surg., Gynec. & Obst. **40**: 899 (May) 1930.

2. Gorski, K., quoted by Martzloff.¹

excised and the margin sutured with fine catgut. Examination of the remaining portion of the great omentum revealed no other aperture. The appendix was delivered through the incision and removed after the meso-appendix was divided and ligated between clamps. The stump of the appendix was phenolized and buried with a purse-string suture of silk. The bowel was examined for some distance both proximal and distal to the cecum and seemed normal. No other abnormality was observed in the abdomen. The incision was closed without drainage.

The appendix was described as follows in the pathologic report: "The appendix, 4.5×1 cm., is congested, dark red and covered with fibrin. The wall is thick and the mucous membrane edematous. The lumen contains feces and pus. Microscopically there is a thickened serous layer with hemorrhage and many polymorphonuclear leukocytes. There is edema of the muscularis with necrosis of the mucosa in some areas. There is an acute inflammatory exudate and necrotic debris in the lumen. Diagnosis: Appendicitis, acute, with gangrene and localized peritonitis."

Postoperative Course.—The postoperative course of the patient was uneventful; the highest temperature was 100.8 F., recorded on the second day. She was discharged from the hospital, June 6, eighteen days after the operation. Her condition at that time was excellent. The wound had healed by first intention. Jan. 6, 1930, she was well and going to school.

COMMENT

The case presented several interesting features, the most outstanding one being that the appendix, constricted in its mid-portion and gangrenous, gave rise to symptoms of acute appendicitis while there were few symptoms of intestinal obstruction, although definite mechanical obstruction of both the small and large intestine was found at the time of operation. In this respect it closely simulated the case reported by Martzloff.

The occurrence of this condition in a person aged 14 years is apparently unusual for, among the patients whose ages have been recorded in the reports, there is only one younger individual, namely, Curran's patient.³ The present case adds additional evidence that the age incidence of the disease is unlimited.

The location of the opening in the omentum and the absence of any history of previous trauma or operation leaves very little doubt that it was a true preformed opening and not the result of inflammation or a tear. No definite statement regarding the time of formation of the opening seems justified. It seems not unlikely, however, that the opening might have been congenital. The propensity of the omentum to surround an acutely inflamed appendix may have brought the opening in the omentum into relationship with the primarily inflamed appendix, which slipped partly through the opening together with the adjacent portions of the cecum and terminal ileum. This would explain why a portion of the large intestine was involved, whereas generally the small intestine alone becomes ensnared in the abnormal opening.

SUMMARY

The case herein reported is believed to be the seventeenth on record of prolapse of the intestine through a preformed opening in the omentum. Partial prolapse of the cecum, ileum and appendix through a preformed opening in the greater omentum, with symptoms simulating acute appendicitis, occurred in a Negress, aged 14 years. By operation, the intestine was liberated and an acutely inflamed appendix was removed. The patient recovered after an uneventful convalescence.

Buxton Clinic.

3. Curran, J. W., quoted by Martzloff.¹

Spectroscopic Test for Lead in Blood.—The spectroscopic test for the presence of lead in the circulating blood is so recent a development and our experience with it is so limited that a proper evaluation of its usefulness is not possible. A negative spectroscopic test of the blood for lead proves that lead is not circulating and indicates, therefore, that lead poisoning is not occurring. A negative test is certainly of the greatest usefulness. A well marked positive test means that lead is circulating in the blood and indicates either that lead poisoning is still going on or has occurred recently.—Park, E. A., Jackson, D., Goodwin, T. C., and Kajdi, L., *J. Pediat.* 3:265 (Aug.) 1933.

Special Article

ENCEPHALITIS IN ST. LOUIS

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During the five weeks from August 7 to September 10, inclusive, there have been reported in St. Louis City and St. Louis County 656 cases of encephalitis. It appears that the epidemic incidence for this area will not exceed a rate of about one case per thousand of population, and the reported extension of the infection to other places has thus far been remarkably slight. The case fatality rate will be about 20 per cent.

Only 13 per cent of the cases have occurred among the 25 per cent of the population which is under 15 years of age, and 23 per cent of the patients have been in the age group 15 to 34 years, which comprises 35 per cent of the total population. The recovery rate in these two age groups has been relatively high, with about half as many deaths in proportion to the number of cases as in the other two age groups. Twenty-nine per cent of the cases have been among the 27 per cent of the population that is from 35 to 54 years old. The age group over 55, comprising only 13 per cent of the population, has had 35 per cent of the cases, and the case fatality in this oldest age group has been about double the rate for the other age group. There appears to be no racial or sexual predilection save the usual preponderance of males in the age group under 15.

Clinically, this outbreak has resembled other epidemics of encephalitis, but especially that described as occurring around the Inland Sea of Japan in 1924.¹ It has differed from most other outbreaks in that ophthalmoplegia, ptosis and strabismus are much more uncommon, while demonstrable meningeal involvement is practically uniform in the recognizable cases; as observed thus far, recovery has been more often prompt and complete. The onset is usually fairly sudden, that is, not prolonged over more than three days to reach a definite development, with general malaise and a febrile disturbance, often with a headache. Vomiting and other gastro-intestinal symptoms are not uncommon. Evidence of cerebral involvement may be the first indication of the disease. Pronounced somnolence is not the rule; the patients are apathetic, mentally and physically sluggish, stuporous or comatose rather than somnolent; they may be delirious enough to require restraint but are not noisy. The neck becomes slightly or moderately stiff at some stage in the well developed disease, and the cells in the spinal fluid are above normal in number, rarely exceeding a few hundred, chiefly lymphocytic. The lumbar puncture often relieves the headache permanently. With the fever there is usually a moderate leukocytosis. Some of the chief reflexes and the superficial reflexes, such as the abdominal, are absent and vary from day to day. Actual paralyses occur but are typically transient. The response of the great toe is dorsal extension on plantar stimulation (Babinski) or on firm downward rubbing of the tibial group of muscles (Oppenheim) in many cases. Tremors are frequent; and the muscles often tend to be somewhat rigid. Difficulty

From the Oscar Johnson Institute, Kingshighway and Euclid Avenue, St. Louis.

1. Kaneko, R.: *Japan M. World* 5: 237 (Sept.) 1925. Kaneko, R., and Aoki, Y.: *Ergebn. d. inn. Med. u. Kinderh.* 34: 342, 1928.

in feeding and the danger of bedsores, as well as the maintenance of isolation, make hospitalization advisable. Painful sensations, as of the abdomen or legs, are not infrequent in the early stages. The fever may last only three days, or it may be prolonged more than two weeks. The symptoms tend to improve with the subsidence of the fever, but not uniformly. The incubation period is probably a week or more.

The pathologic lesions are similar in nature to those found in other epidemics of encephalitis (not the post-infectious demyelination encephalitis) but are more diffuse through the brain and meninges without special localization in the basal ganglions and brain stem. Before the St. Louis Medical Society, September 1, Dr. H. A. McCordock demonstrated inclusion bodies that had been found in the kidneys in about half the cases examined by Dr. Margaret G. Smith.

Epidemiologic studies are being conducted by the United States Public Health Service in connection with the health departments concerned, and insect transmission experiments, particularly with mosquitoes, are being carried out not only by a unit of the Public Health Service group under Surgeon L. L. Williams, Jr., but also by Major James S. Simmons, director of laboratories, Army Medical School, and Major V. H. Cornell, curator of the Army Medical Museum at Washington. Drinking water and milk as major factors in the spread of the disease appear to be excluded, but the incidence has been especially high in the suburban districts. During the early part of the epidemic the rate in St. Louis County was eleven times that in St. Louis City. Connected cases and cases in the same family have been occurring nearly as frequently as would be expected in a poliomyelitis epidemic of similar intensity and distribution. The precautions taken are similar to those used in poliomyelitis, including isolation of the patients for three weeks from the date of onset, and screening in addition.

During the early part of the epidemic a Metropolitan Health Council was formed by the local health officers of the St. Louis area, and committees were appointed on administrative control, including epidemiologic records, and on research. Dr. R. S. Muckenfuss, assistant professor of medicine in Washington University School of Medicine, was made chairman of the latter committee, which consisted of representatives of St. Louis University, Washington University, and the various hospitals in which there were cases of the disease. At a meeting of the Metropolitan Health Council, September 8, a report from this committee was made on attempts to transmit encephalitis to monkeys, by Dr. Muckenfuss, Dr. Charles Armstrong, surgeon, U. S. Public Health Service, and Dr. H. A. McCordock, associate professor of pathology in Washington University School of Medicine, as follows:

Since the beginning of the outbreak of encephalitis in St. Louis, numerous animals of different species have been inoculated with material of several kinds from patients suffering with this disease. Six monkeys inoculated with material from five different patients dying of encephalitis have shown fever beginning with the eighth to the fourteenth day after inoculation. Coincident with the rise of temperature, tremors, incoordination and weakness have appeared. Three of these animals have been submitted to pathological examination, and their central nervous systems showed lesions consistent with the picture found in human epidemic encephalitis. Reinoculation of material from these monkeys into normal monkeys is also progressing. While these results are encouraging, many weeks' work has yet to be done before it can be stated that the human disease has been established in animals.

The cooperation of all concerned, including the Health Department of the City of St. Louis, the Missouri State Health Department, St. Louis University and Washington University, as well as the medical profession and the communities concerned, offer an opportunity unique up to this time for the study of this disease. It is hoped that results to some extent commensurate with the opportunity may be forthcoming.

Extension of the disease from one case directly to another, when the cases are recognized and precautions are taken, is unusual. The early recognition of the disease and the reporting of cases to the proper health authorities are therefore preventive measures peculiarly the physician's own.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

ANTIRABIC VACCINE (See New and Nonofficial Remedies, 1933, p. 371).

United States Standard Products Company, Woodworth, Wis. *Rabies Vaccine-U. S. S. P. (Semple Method)*.—(See New and Nonofficial Remedies, 1933, p. 374). Also marketed in packages of seven syringes, each containing one dose of 2 cc., and in packages of fourteen vials each containing one dose of 2 cc. with syringe.

IPRAL (See New and Nonofficial Remedies, 1933, p. 89).

The following dosage form has been accepted:

Ipral Tablets, ½ grain.

ORGANIC LUTIN NOT ACCEPTABLE FOR N. N. R.

Report of the Council

The Council has authorized publication of the following report. When the final statement of the Council's action was transmitted to the Abbott Laboratories, the firm replied that after careful consideration of the Council's action it had been decided not to market Organic Luetin. The Council decided that the report of its consideration should be published on account of its academic interest and voted an expression of appreciation for the attitude of cooperation shown by the firm in its decision not to market Organic Luetin.

PAUL NICHOLAS LEECH, Secretary.

Organic Luetin (The Abbott Laboratories) is stated to be an extract of syphilitic testicular tissue of rabbits infected with the Nichols strain of *Spirochaeta pallida*. It is proposed for diagnostic use as a skin test "in acute, chronic and congenital syphilis, especially where the Wassermann reaction yields falsely negative results." A control solution, which is an extract of normal testicular tissue of the rabbit, is supplied.

At one time the Council accepted a similar luetin preparation, but in 1922 this was omitted because of lack of confirmatory evidence of its value and because the market supply had been reported to be unreliable (Reports of the Council on Pharmacy and Chemistry, 1922, p. 49).

As evidence for the value of Organic Luetin the referee considered an article, "The Interpretation of the Dermoluetin Reaction of Syphilis, Experience with the Kolmer Organic Extract," by D. Truett Gandy, from the clinic of Dr. Jay F. Schamberg and the Research Institute of Cutaneous Medicine. Dr. Gandy presents a moderately good survey of the literature in regard to luetin. He then goes on to make a report on the application in 204 syphilitic patients, the test being taken as a routine measure. These cases were grouped into 10 patients with primary and secondary syphilis; 140 patients with so-called latent syphilis; a third group comprising 54 subjects with congenital syphilis; and 7 patients with cerebrospinal syphilis.

Positive reactions were obtained as follows: primary and secondary syphilis, 10 per cent; late and latent syphilis, 34.2 per cent; congenital syphilis, 31.1 per cent; cerebrospinal syphilis, 28.5 per cent; and cardiovascular syphilis, 11.1 per cent. It was also found that in the group of forty-eight patients with late and latent syphilis who gave positive reactions to luetin, the serum of 22.2 per cent gave negative reactions to the Wassermann-Kahn reaction. In the group of seventeen patients with congenital syphilis, this percentage was 25. Nothing is said in this paper, however, as to the number of positive reac-

Comparison of Luetin and Serum Reactions in Relation to Type of Syphilis

	Cases	Positive Serum Reactions*	Positive Organic Luetin Reactions
Latent syphilis	32	26	4
Early active syphilis:			
Active primary and secondary	20	20	0
"	2	2	0
"	2	2	2
Late active syphilis:			
Neurosyphilis	54	45	13
Cardiovascular syphilis	18	16	2
Tertiary syphilis of skin	5	5	1
Hepatic syphilis	4	4	1
Charcot's joint	2	2	0
Congenital syphilis:			
Interstitial keratitis	5	3	5
Juvenile paralysis	1	1	1
Asymptomatic syphilis	2	2	1

* Both Wassermann and Kline reactions were positive.

tions found in normal cases. At least, this should have been mentioned. Moreover, no mention is made as to whether any of these patients were getting iodides, so that one rather hesitates to take too much for granted from this short period that is reported.

The Council's referee reported that he had been following the subject of the luetin test with a great deal of interest for the past few years and gave the following as the conclusions that he has arrived at at present: It is apparently an allergic state (*umstimmung*) of the skin, developed best in old syphilis though occasionally sufficiently developed quite early in a case of syphilis. In employing this test the physician must realize that he is dealing with a nonspecific reaction—it is not necessarily evolved only by the use of extract of *Spirochaeta pallida*; one may even get a reaction from the local injection of sodium glycocholate, emulsion of normal and pathologic skin, agar, thyroid, gelatin, starch, and a variety of other substances. Moreover, patients, under treatment with potassium iodide, potassium nitrate, bromides and inunctions of mercury may give a nonspecific reaction. Positive reactions have been noted in some normals; thus a positive luetin test in itself is insufficient evidence on which to base a diagnosis of syphilis. It is probable that this allergic state (*umstimmung*) of the skin persists longer than the positive serologic reaction—at least longer than the Wassermann reaction. Probably this is the only real excuse for employing the test. In that group of old cases under therapy, potassium iodide and allied salts being eliminated, all serologic tests may have disappeared though the luetin test may still be positive. Under such circumstances it might have a small value as a criterion of further benefit from treatment—when it became negative. The test might have doubtful value in certain old suspected cases of syphilis with questionable physical manifestations, questionable history and negative serologic reaction. A positive diagnosis under such conditions should, however, be arrived at only after very careful and painstaking study at the hands of an expert.

After consideration of the referee's report, the Council held Organic Luetin unacceptable for New and Nonofficial Remedies because of lack of sufficient evidence for its value and safety and because further experimental work is required before its general use is to be recommended.

A report of the Council's consideration was sent to the Abbott Laboratories, and as a result the firm expressed its desire to withdraw its application for consideration of the product by the Council. The firm was informed that it is not the custom of the Council to permit withdrawal of such application and in

the end the firm stated that, pending the outcome of experimental work being carried on, the advertising and promotion of the product would be discontinued and no further quantities would be manufactured. The firm has adhered to this agreement and the Council desires to express its appreciation of the firm's attitude in this matter.

Work has recently been done on Organic Luetin by Dr. John Ambler of the Department of Dermatology and Syphilology of the Western Reserve University, the Abbott Laboratories having kindly supplied generous portions of the luetin for these examinations. He has made examination of 500 patients, including both syphilitic and nonsyphilitic persons; 359 were proved to be nonsyphilitic and 141 syphilitic. Dr. Ambler's results are given in the accompanying table.

In no instance did the administration of iodides or bromides in nonsyphilitic patients provoke a true positive luetin reaction; instead, ingestion of iodides apparently caused production of troublesome pseudoreactions in both syphilitic and nonsyphilitic subjects. The reactions seemed to be most often positive in that phase of syphilis in which additional diagnostic aids are least needed; namely, active tertiary syphilis. Gummas of the skin are usually comparatively easy to diagnose, while, in conditions such as syphilitic aortitis, in which additional diagnostic measures are urgently needed, the luetin reaction was of little or no value. In early syphilis it was of no help; this has been often noted before. In iridocyclitis and interstitial keratitis it is true that the organic luetin reaction seems to have a definite place as a diagnostic aid. In syphilis of the central nervous system, in which a positive test would be more desirable, the value of the test was far below that of serologic examination.

In consideration of the further work of Dr. Ambler, the Council reaffirmed its previous decision declaring Organic Luetin unacceptable for New and Nonofficial Remedies because of lack of sufficient evidence for its value and safety, and authorized this statement of its consideration for publication.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.
RAYMOND HERTWIG, Secretary.

EXPRESSION OF APPRECIATION TO CONSULTANTS WHO HAVE ASSISTED THE COMMITTEE

During the past year a number of authorities in their respective scientific fields were consulted on questions of moment before the Committee arising out of its regular business. In recognition of the helpful cooperation and valuable assistance given, the Committee has voted to express publicly its appreciation by publishing the names of those who in this manner and without remuneration have gladly contributed of their time, experience and knowledge to the benefit of the Committee in its public welfare and health work.

The Committee is officially thanking the following who have served as consultants:

Anderson, William E., M.A., research assistant, Department of Physiological Chemistry, Yale University.
Baldrige, C. W., M.D., associate professor of theory and practice of medicine, State University of Iowa College of Medicine.
Boyd, J. D., M.D., associate professor, Department of Pediatrics, State University of Iowa College of Medicine.
Cooke, J. V., M.D., associate professor of pediatrics, Washington University School of Medicine, St. Louis.
Cowgill, George R., Ph.D., associate professor, Department of Physiological Chemistry, Yale University.
Darrow, D. C., M.D., assistant professor of pediatrics, Yale University School of Medicine.
Eliot, Martha M., M.D., chief, Division of Maternity and Infancy, United States Children's Bureau; associate clinical professor of pediatrics, Yale University School of Medicine.
Fisher, Harry J., Ph.D., assistant chemist, Connecticut Agricultural Experiment Station.
Rowntree, Jane I., Ph.D., professor of nutrition, Department of Home Economics, University of Washington.
Sherman, Prof. Henry C., Ph.D., Sc.D., chairman of the Department of Chemistry, Columbia University, New York.
Smith, Arthur H., Ph.D., associate professor, Department of Physiological Chemistry, Yale University.
Stearns, Genevieve, Ph.D., research associate professor, Department of Pediatrics, State University of Iowa College of Medicine.

RULE GOVERNING LABELS AND ADVERTISING
SUBSEQUENT TO ACCEPTANCE

Paragraph 9, page 9, of the Rules and Regulations, February, 1933, has been amended by substitution of the following paragraphs:

Subsequent to acceptance, sponsors of accepted foods are obligated to furnish the Secretary with one copy of proof of all pieces of new advertising, including leaflets, booklets, newspaper and magazine advertisements, radio statements, billboard and window displays, etc. This material shall be provided at the time of its preparation and may be forwarded unaccompanied by letter of transmission. It will not be necessary to await criticism of the advertising before it is promulgated to the public. The advertising will be acknowledged only when it does not comply with the requirements of the Committee. It is recommended that elaborate and costly advertising intended for circulation for a long time be submitted for approval before it is printed.

Those responsible for advertising for accepted foods should familiarize themselves thoroughly with the Rules and Regulations and General Committee Decisions. New types of claims not passed on by the Committee at the time of acceptance shall not be used without the consent of the Committee. The labels of accepted foods shall not be changed in any manner without first sending a proof of the new label to the Secretary. These proofs will not be acknowledged, provided they are satisfactory.

Noncompliance with these requirements shall be sufficient reason for withdrawal of acceptance.

BOOKLET "GENERAL COMMITTEE DECISIONS
ON FOODS AND FOOD ADVERTISING"

Copies of the July, 1933, edition of the booklet "General Committee Decisions on Foods and Food Advertising," including all decisions adopted by the Committee up to date of issue, will be furnished without charge on request addressed to the Secretary.

REPORTS OF THE COMMITTEE

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

McCORMICK'S BEE BRAND GINGER

McCORMICK'S BEE BRAND WHOLE GINGER

Manufacturer.—McCormick and Company, Inc., Baltimore.

Description.—Washed and dried decorticated ginger root (rhizome of *Zingiber officinale* Roscoe); ground and unground.

Manufacture.—Fully grown ginger roots are harvested after the plant withers, are cleaned of dirt, the leaves and stalks are cut away, and the roots are submerged in boiling water for ten minutes to prevent germination. The outer epidermal layers are more or less completely removed by scraping to facilitate drying in the sun, the roots being turned over frequently. The drying takes about ten days, the moisture loss being approximately 70 per cent. The dried root is sorted, exported in burlap bags, and packed whole or ground in cartons or tins at the company's packing plant.

Analysis (submitted by manufacturer).—

	per cent
Moisture	9.1
Cold water extract.....	14.0
Total ash.....	5.1
Ash soluble in cold water.....	2.7
Acid insoluble ash.....	0.3
Volatile ether extract.....	2.0
Nonvolatile ether extract.....	4.3
Protein (N \times 6.25).....	7.7
Starch.....	52.2
Crude fiber.....	4.3
Carbohydrates other than crude fiber (by difference).....	67.5
Calcium oxide (CaO).....	0.21

Claims of Manufacturer.—Conforms to the respective United States Department of Agriculture standards.

GIBSON FINEST TOMATO JUICE

Manufacturer.—Gibson Canning Company, Gibson City, Ill.
Description.—Tomato juice seasoned with salt; retains in high degree the vitamin content of tomatoes.

Manufacture.—Fresh, vine ripened tomatoes are flumed into a bathing and rotary washer. Selected stock is removed from the sorting conveyor, cored, and heated in a housed conveyor containing steam; the tomatoes are discharged into a hopper and machine cut in a steam atmosphere. The juice is expressed in a screw conveyor surrounded by steam; the screw is hollow and kept hot with steam. As a result of the heat, the air is driven off during the preparation of the juice, which is discharged from the press at 93 C. into the bottom of tanks to avoid incorporation of air. The juice is seasoned with salt, canned hot, and processed at 100 C. for from fifteen to thirty minutes.

Analysis (submitted by manufacturer).—

	per cent
Moisture	93.5
Total solids.....	6.5
Ash.....	1.2
Sodium chloride (NaCl).....	0.8
Fat (ether extract).....	0.1
Protein (N \times 6.25).....	1.0
Reducing sugars as invert sugar.....	3.2
Sucrose.....	none
Crude fiber.....	0.2
Carbohydrates other than crude fiber (by difference).....	3.4
Titrate acidity as citric acid.....	0.6

Calories.—0.2 per gram; 6 per ounce.

Vitamins.—The method of preparation and packing are efficient for protecting the natural vitamin values.

Claims of Manufacturer.—This tomato juice is a good source of vitamins A and B and an excellent source of vitamin C. Especially prepared for table use and as a vitamin C supplementary food for infant feeding.

CLAPP'S ORIGINAL PUREE OF PRUNES

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Strained cooked prunes. The method of preparation is efficient for retention in high degree of the natural vitamins and minerals.

Manufacture.—California pitted prunes are soaked in water and strained in an atmosphere of steam, which softens the fruit and excludes air. The strained material is subsequently treated as described for Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

Analysis (submitted by manufacturer).—

	per cent
Moisture	79.0
Total solids.....	21.0
Ash.....	0.7
Fat (ether extract).....	1.2
Protein (N \times 6.25).....	0.7
Crude fiber.....	2.0
Carbohydrates other than crude fiber (by difference).....	16.4

Calories.—0.8 per gram; 23 per ounce.

Vitamins and Claims of Manufacturer.—See Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

SNOW WHITE PATENT FLOUR (BLEACHED)

Manufacturer.—Minot Flour Mill Company, Inc., Minot, N. D.

Description.—A hard spring wheat patent flour; bleached.

Manufacture.—Selected hard spring wheat is cleaned, washed, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-ninth ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (four-tenths ounce per 196 pounds).

Claims of Manufacturer.—For bread baking.

CENTRELLA BRAND EVAPORATED MILK

Packer.—The Page Milk Company, Merrill, Wis.

Distributor.—Central Wholesale Grocers, Inc., Chicago.

Description.—Canned, unsweetened evaporated milk, the same as Page Evaporated Milk (THE JOURNAL, May 30, 1931, p. 1872).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 16, 1933

ENCEPHALITIS IN ST. LOUIS

Elsewhere in this issue is a special article on the epidemic of encephalitis in St. Louis and St. Louis County, where more than 115 deaths have occurred and the number of cases continues to increase, now totaling approximately 656. Occasional cases of epidemic (lethargic) encephalitis appearing in other parts of the country tend to be confused with the situation that exists in Missouri. The condition that has appeared in epidemic form in St. Louis County is not, apparently, the usual epidemic encephalitis but a new form classified as encephalitis B and identified by health authorities with a similar condition, which has previously occurred in Japan and Australia. The United States Public Health Service, the United States Army Medical Corps and both local and state officials have combined in an intensive study of the condition, without thus far having obtained more than a slight lead toward establishing its nature and with little, if any, knowledge of its means of transmission. Without definite knowledge of the cause of the disease or of its mode of transmission, it is impossible to establish any certain method of prevention or control. Moreover, as far as is known, there is nothing specific in the treatment of this disease. Such treatment as is now being given is supportive, including intravenous injection of dextrose and the usual symptomatic care.

All indications thus far determined as to the cause of the condition point to an unidentified virus capable of passing a Berkefeld filter and therefore susceptible of demonstration only by its ability to produce disease when injected into animals. Available reports indicate that monkeys have been inoculated, with the occurrence thereafter of fever and tremor and the weakness characteristic of human beings in whom this disorder develops. Both horses and mules have been inoculated with material taken from the brains of those who have died of the disease, and it is reported that a similar condition was produced in one of these animals. The scientists who are conducting this collective investigation may be depended on to continue their work with

the vast material now available from those ill with the disease and from those who have died of it.

There has been some attempt to determine whether or not mosquitoes, which are present in St. Louis in unusual numbers, may not be associated with the transmission of the disorder, but thus far such experiments have not been at all conclusive.

In the meantime, physicians throughout the country should report at once to health officers in their localities the occurrence of any well established case of a similar disorder, or even any case that seems to be slightly suggestive of this disorder. Although the condition seems for the present to be rather well localized in St. Louis County, it is impossible to predict when cases may appear in some other community. If they do, the mere fact of that appearance may afford an invaluable clue to the mode of transmission. Physicians everywhere must be alert for the occurrence of this disorder. Certain symptoms should lead to suspicion of the diagnosis of encephalitis B: sudden onset, high temperature which lasts about a week and then declines, headache, occasionally diplopia, occasionally lethargy, but also tremors and convulsions. Lumbar puncture reveals clear spinal fluid usually under pressure, with a high cell count and with globulin and sugar, and the blood count shows a leukocytosis of from 15,000 to 20,000. It is conceivable, as with poliomyelitis and other conditions involving the nervous system, that there may be occasional cases so mild as to be overlooked. Patients thus affected, however, on becoming well, act as carriers of the disorder to other people. Epidemiologists are inclined to postulate special sensitivity or a natural immunity in some instances, which may be the reason for a single case occurring in many families. It is the history of similar disorders that the coming of cold weather is associated with their gradual disappearance.

PHYSICIANS AND THE NRA

A letter from Gen. T. S. Hammond, Executive Director, Blue Eagle Division of the National Recovery Administration, published elsewhere in this issue,¹ expresses his regret that recent editorials in *THE JOURNAL* have indicated "a misunderstanding of the National Recovery Administration's policy toward doctors and dentists." The headquarters personnel of the American Medical Association has studied the National Industrial Recovery Act ever since it was introduced in Congress. It has also studied the President's Reemployment Agreement. The act is, by its terms, clearly limited to trades and industries. It is not applicable to the professions, except as they are integral parts of trades and industries, and the private practice of medicine does not come within that category. If Congress had intended the act to cover the professions, it easily could and presumably would have said so.

1. Association News, this issue, p. 935.

The phraseology of the President's Reemployment Agreement with respect to the professions is ambiguous. When the agreement provides for the exemption of professional persons who are employees, in certain favored communities, from restrictions as to hours of labor, it clearly implies that in all other respects and in all places professional persons as employees are subject to the terms of the agreement. However, the agreement purports on its face to have been promulgated by authority of section 4, subsection (a), of the National Industrial Recovery Act, and the authority there granted covers only trades and industries.² The National Recovery Administration, moreover, has officially interpreted the President's Reemployment Agreement as not covering professional occupations.³

Disregarding the strict letter of the law, however, and seeking to find ways in which it could best cooperate with the President in his effort to bring the Blue Eagle campaign to a successful issue, the American Medical Association has made personal contacts with representatives of the National Recovery Administration in Washington and has corresponded with the administration. It has studied all available interpretations of the National Industrial Recovery Act and of the President's Reemployment Agreement as they have been made public. It has sought information from other sources whenever and wherever practicable. The information thus obtained, including interpretations and instructions from official sources, the Association still finds difficult to weave into a consistent whole. On the basis of all information thus far acquired, however, including the information embodied in General Hammond's letter, *THE JOURNAL* now submits an outline of advice for the information and guidance of its readers.

As was said in a previous editorial, it is hoped that every physician and medical institution will enter into the spirit of this movement so as to assure its success.

PRESCHOOL EXAMINATIONS BY THE FAMILY DOCTOR

The opening of the schools this month means the return of millions of children to their studies and the entry of other millions for the first time on a life that is totally new to them. The entry into school represents one of the most radical transitions in the life of a child. It takes place at the end of a period in the child's life which is often neglected from the standpoint of health. Thus, children entering school

are customarily found suffering with large numbers of correctable defects.

Until about 1924, not much stress was laid on health problems affecting children of the ages between infancy and school. Infant health had its place in the limelight during and just after the war, while school health had been the subject of attention since the last decade of the nineteenth century. In between lay the preschool years, the runabout period, during which tonsils and adenoids became infected, teeth decayed, eyes failed, speech defects and behavior problems grew and developed, and even the more serious diseases such as cardiac lesions and childhood tuberculosis took their toll, fewer as to number but more important as to significance in the life of the child. The contagious diseases and their complications also impaired the health of preschool children. As a result of all these factors, children have been delivered to the educational system in more or less impaired health and consequently unfit for the radical transition from a life of play to one of responsibility, from home dependence to comparative self reliance, from a protected situation in the home to competition and cooperation with others.

Realization of the need for health supervision of the preschool child has grown since 1924. The largest single project in this field is that of the National Congress of Parents and Teachers, which in 1925 caught the popular imagination with its slogan "The Summer Round-Up of the Children" and since then has been carrying on this activity. The report¹ for 1932 shows that some 85,000 children were examined and the results reported to the national congress. Other examinations not reported increased this total, and still other thousands have been examined by health departments and child welfare agencies not affiliated with the national congress. The program of the national congress has had the cooperation of the American Medical Association, which through *Hygeia* has furnished half the blanks used each year. Moreover, doctors singly and as society groups have cooperated liberally in many preschool health projects.

Thus far, most of the examinations have been conducted on the so-called clinic plan. Groups of children have been assembled and given an examination by a group of doctors, usually volunteer, assisted by nurses of the health department or voluntary agency and by lay helpers from the sponsoring organization. Dentists sometimes assist in their special field. No doubt, good has come out of these examinations, superficial as they are for the most part. However, they have not done as much good as a more thorough examination would have done. The group method has inherent defects which preclude the greatest benefits. There is lack of privacy, quiet and leisure, all of which

2. "The President is authorized to enter into agreements with, and to approve voluntary agreements between and among, persons engaged in a trade or industry, labor organizations, and trade or industrial organizations, associations, or groups, relating to any trade or industry, if in his judgment such agreements will aid in effectuating the policy of this title with respect to transactions in or affecting interstate or foreign commerce, and will be consistent with the requirements of clause (2) of subsection (a) of section 3 for a code of fair competition."—National Industrial Recovery Act, section 4, subsection (a).

3. "The following groups of employment are not intended to be covered by the President's Reemployment Agreement: 1. Professional occupations. . . .—National Recovery Administration, Interpretations of President's Reemployment Agreement. Interpretation No. 6 (Concerning employments covered by the agreement).

1. The Summer Round-Up of the Children, A Health Activity of the National Congress of Parents and Teachers, 1201 Sixteenth Street, N.W., Washington, D. C.: General Summary of Results of 1932 Campaign and Summary of Results by State Totals.

are essential to a good examination. Moreover, a single examination, hurriedly made, gives no true picture of a child's actual condition. The gross and obvious defects can be and are discovered, and that is a gain, but the less obvious deviations from normal, to say nothing of environmental hygienic errors, can be discovered only by a more exhaustive examination. Such an examination can be done only in the private office of the family physician. In New York City it has been demonstrated that examinations, which are school entrance requirements, need not be made by school staff physicians but can better be made by the family physician.²

The National Congress of Parents and Teachers, as well as other public health workers, recognizes that the best results will be obtained from preschool examinations, as well as other phases of periodic health examinations, when they are taken over by the general practitioner. Meager statistics indicate that this is virtually an untilled field, from which great harvests of health improvement remain to be gathered. Individual health improvement is the next great step in the progress of public health. It does not lend itself to mass movements. It is preeminently the field of the general practitioner.

Current Comment

YOUR CARD FOR THE DIRECTORY

This month an information card is being sent from the headquarters office of the American Medical Association to every physician in the United States and Canada. The information thus secured is to be used in the compiling of the thirteenth edition of the American Medical Directory. The directory is prepared at regular intervals in the Biographic Department of the American Medical Association. The last previous directory appeared in 1931. This volume is one of the most important contributions of the American Medical Association to the work of the medical profession in the United States. In it, as in no other published directory, may one find dependable data concerning physicians, hospitals, medical organizations and activities. It provides full information concerning medical colleges, specialization in the field of medical practice, memberships in special medical societies, tabulations of medical journals and medical libraries and, indeed, practically every important fact concerning the medical profession in which any one might possibly be interested. Therefore, those who receive this card should fill it out and return it promptly whether or not any change has occurred in any of the points on which information is requested. Should any reader fail to receive a card before the first of October, he may aid by writing at once to the headquarters office, stating that fact and indicating such changes as he may desire in the information published in the 1931 issue of the directory.

2. Examination of School Children, editorial, Bull. M. Soc. County of Kings and Academy of Medicine of Brooklyn 12:99 (Aug.) 1933.

SAFETY ON THE GRIDIRON

In its criticisms of the health hazards of football, THE JOURNAL has frequently protested against the seeming indifference shown by many promoters of this sport. During the football season of 1932, changes in the rules, somewhat reluctantly adopted in the face of a few tragic fatalities that received nationwide notice, were put into operation. They did not solve the problem of eliminating the hazards of the game in the degree hoped for. The secretary of the football rules committee reported during the midwinter convention of the National Collegiate Athletic Association that the number of serious and fatal injuries reported by the press during 1932 was disconcerting, as it was confidently expected that the changes in the rules effected in February, 1932, would bring about a much lower average. Although there was a material decrease from 1931, the casualty list reported constituted a problem of serious import.¹ In a game involving so much physical contact as the present rules permit, even an unprejudiced observer is forced to admit that injuries to the players are to be expected. It is perhaps unfortunate that the real leadership in the sport rests in the hands of persons who seem to be far more concerned with problems of "strategy" and the urge to win than with the opportunities for eliminating the rigors of the game. Is it going to require a few more spectacular deaths of "fighting youth" to raise a national protest against the apparent laxity or indifference of those in command? It has been estimated that about three quarters of a million young Americans play football each year, with a mortality rate of less than 0.03 per cent. What the morbidity among the players is cannot readily be conjectured. To some devotees of the game the arraignment of football on the basis of such figures seems to be unwarranted, but at least one member of the collegiate administrative group has sensed the situation. In an appeal for advanced leadership on the part of the national association, he¹ referred to the football injuries, stating that every effort should be made by officials to avoid the appearance of being forced by public opinion to make changes in the rules.

ACTIVE IMMUNIZATION WITH TETANUS TOXOID

Successful immunization of man with tetanus toxoid was reported several years ago by French investigators and has recently been confirmed by Lincoln and Greenwald,¹ of the New York department of health. The antigen used by the New York clinicians was a formaldehyde-treated tetanus toxin incubated for ten days. Intramuscular injections of the resulting toxoid were painful, but general reactions did not occur and local reactions were slight. Before the first injection no trace of tetanus antitoxin was demonstrable in the serum of any one of the eighteen human volunteers. From four to eight months later, traces were demonstrable in all, the amounts in four of them being suffi-

1. The situation was reviewed by R. F. Kelley in the New York Times, Dec. 31, 1932.

1. Lincoln, E. M., and Greenwald, C. K.: Proc. Soc. Exper. Biol. & Med. 30:1241 (June) 1933.

cient for definite titration; one cubic centimeter of the serum of certain individuals, for example, neutralized from one to two guinea-pig minimum lethal doses of tetanus toxin. Six months later, five of the original volunteers were reinjected. From six to eight months later these revaccinated individuals yielded serums which contained from 25 to 75 neutralizing units per cubic centimeter. At the same time, six of the original volunteers who had not been reinjected still showed traces of antitoxin, in several of them in definitely increased amounts (e. g., 5 neutralizing units per cubic centimeter). Today, three years after the initial injection, thirteen of the volunteers have been retested. In all but one of them, antitoxin is still demonstrable. One interesting exception to the suggested general rule is reported, a child of five years who developed no demonstrable immunity after two series of tetanus toxoid injections but who did develop a demonstrable immunity to diphtheria (Schick test) after three routine injections of diphtheria toxin-antitoxin mixture.

Association News

PHYSICIANS AND THE NRA

To the Editor:—My attention has been called to editorials which have appeared in the issues of August 12, 19 and 26, of THE JOURNAL of the American Medical Society, and I regret that there has been a misunderstanding of the National Recovery Administration's policy toward doctors and dentists.

While it is not the intention of the Administration to make it a matter of compulsion to have professional persons place their employees under the provisions of the President's Reemployment Agreement, it is the earnest desire of the Administration that they do so, thus showing their willingness to cooperate with the President's Reemployment Program.

Under the provisions of the Agreement, professional employees of doctors and dentists are excepted from the maximum hour provision of the Agreement while employed in their professional capacity. The term "professional employee" includes interns, technicians and nurses. All non-professional employees are intended to be covered by both the wage and hour provisions of the Agreement.

The general rule that the maximum hour limitation shall not apply to employees in establishments employing not more than two persons in towns of less than 2,500 population, which towns are not part of a larger trade area, would, of course, apply to doctors and dentists.

I regret the misunderstanding which has existed to date, and shall greatly appreciate your good offices in placing this correction before your readers.

T. S. HAMMOND, Executive Director,
Blue Eagle Division of the NRA.

In an endeavor to comply with General Hammond's request, the following statement is made for the information and guidance of physicians. It is based on the most recent, accurate information that the Association has as yet been able to obtain:

1. The National Industrial Recovery Act and the President's Reemployment Agreement do not cover legally the practice of medicine. A practitioner of medicine is not within the purview of the act or of the agreement unless his practice is an integral part of a trade or industry. He incurs no legal liability if he refrains from signing the agreement. All this, however, should not prevent any physician from signing the agreement if he desires and if he can do so consistently with the purpose and spirit of the National Industrial Recovery Act.

2. Before signing the President's Reemployment Agreement, a physician should determine whether his doing so and display-

ing the Blue Eagle may not tend to discriminate against his less prosperous professional associates. The elimination of unfair competition is one of the basic purposes of the National Industrial Recovery Act. The President himself¹ has no authority to approve a code or to enter into an agreement that will eliminate, oppress or discriminate against small enterprises. Certainly, then, no one has the right to utilize the President's Reemployment Agreement as the means for unfairly getting the better of a competitor. The financially successful physician who thinks of signing the agreement should therefore bear in mind that if he displays the Blue Eagle he may seem to be bidding for the patronage of every person who has signed the President's Reemployment Agreement or the Consumer's Agreement, and that this will include a bid for the patronage of the patients of the less prosperous physicians in the community, who because of financial considerations cannot practice under the terms of the Reemployment Agreement. Every patient who has subscribed to either of the agreements named, it should be borne in mind, is bound by a solemn obligation to patronize physicians who have signed it. A physician who desires to subject himself to the President's Reemployment Agreement may seek the advice of his county medical society before he commits himself. The society can advise him whether the signing of the agreement and the display of the Blue Eagle by one or more physicians in the community will tend to eliminate, oppress and discriminate against others, contrary to the principles of the National Industrial Recovery Act.

3. Every county medical society may well, either with or without a request for advice from some individual physician, determine whether the requirements of the President's Reemployment Agreement are such that every physician in the community can practice under it without undue hardship. If the society finds that that is the case, the forbidden element of unfair competition and the oppression of weak competitors can hardly be said to enter into the situation, and every physician may be left to decide for himself whether he will or will not practice under the agreement. If, on the other hand, the society finds that some physicians, because of conditions beyond their control, cannot without undue hardship subject themselves to the requirements of the agreement, the society can then determine whether the agreement is susceptible of modifications that will make it possible for every physician in the community to submit to its terms. If the agreement is susceptible of being so modified, the society can submit to the National Recovery Administration a petition for such modification. The agreement itself² recognizes that modifications may be necessary and provides a rather one-sided way for bringing them about in order to avoid hardship in individual cases. There is no reason, however, why by a somewhat similar procedure the agreement should not be modified to meet the needs of the medical profession of a county. If the agreement is so modified, the element of the elimination, oppression, discrimination and unfairness against weaker competitors will have been removed and it may be left for each physician to choose his own course.

4. To avoid future disappointment, it must be recognized that the law does not provide for the punishment of a physician who signs the President's Reemployment Agreement and then cheats. It is understood, however, that the National Recovery Administration has in mind the setting up of machinery whereby persons who have obtained the Blue Eagle and who cheat under it will be held up to public odium through action compelling the surrender of the official insignia. County medical societies that approve the President's Reemployment Agreement in its original or in any modified form may well consider how they can best cooperate with the National Recovery Administration in any efforts that may be made to enforce honest compliance with its terms by all practitioners who sign it, whether members of the society or not.

5. A physician who employs no one can subject himself to the requirements of the President's Reemployment Agreement if he so desires and thus obtain the right to display the Blue Eagle.³ A physician without employees obligates himself by signing the agreement to hire in accordance with the terms of the agreement such employees, if any, as he may engage during the life of the agreement; that is, until Dec. 31, 1933. Whether a physician has more than two employees in his service, or has none at all, is immaterial as far as the privilege of signing the agreement and obtaining the Blue Eagle are concerned.

6. Hospitals are not within the purview of the National Industrial Recovery Act or of the President's Reemployment Agreement unless they are integral parts of a trade or industry.

1. National Industrial Recovery Act, section 3, subsection (a), clause 2; sec.
2. nt, paragraph 14.
3. Interpretations of President's Reemployment Agreement, Interpretation 14 (concerning owners of stores without employees).

IOWA

Diphtheria Immunization Campaign.—Plans have been announced for a campaign to immunize children of preschool and early school age in Davenport. Members of the Scott County Medical Society will cooperate, and children of parents unable to pay will be treated at the Scott County Clinic.

Personal.—Dr. William Stevenson, life member of the Iowa State Medical Society, has been made an emeritus member of the Des Moines Academy of Medicine.—Dr. Frederick J. Swift, Maquoketa, has assumed his duties as deputy health commissioner of Iowa, succeeding Dr. William W. Johnston.—Dr. Glen W. Doolen, Davenport, has been appointed a member of the executive board of the Iowa Tuberculosis Association.

KANSAS

Society News.—Dr. Maurice A. Walker, Kansas City, directed a pathologic conference before the Wyandotte County Medical Society, July 25, and Drs. Charles O. West and Lewis G. Allen, Kansas City, discussed "Acute Summer Rashes" and "The Bronchograph," respectively. At a meeting of the society, September 5, the speakers were Drs. Eldon S. Miller and Fred E. Angle, Kansas City, on "Nondiabetic Glycosuria and Its Significance" and "The Electrocardiogram in Coronary Disease," respectively.

Annual Registration Due Not Later Than October 1.—All practitioners of medicine and surgery holding certificates to practice in Kansas are required by law to renew their certificates annually, after July 1 and not later than October 1, by registering with the secretary of the board of medical registration and examination and paying a fee of \$1. If a licentiate has not effected his annual registration by October 1, his name will be stricken from the register of physicians kept by the board and will be restored only on the payment of \$5 and the submission of satisfactory proof as to his moral fitness.

LOUISIANA

Grants for Medical Research.—Donations and appropriations to Tulane University of Louisiana School of Medicine, announced in a recent *Tulane News Bulletin*, include the following:

The Commonwealth Fund, \$25,000 for the operation of teaching clinics.
The Commonwealth Fund, \$25,000 for teaching of preventive medicine in the schools of medicine and graduate medicine.
The General Education Board, \$45,000 for the departments of medicine and surgery.
An anonymous donor, \$5,250 for the department of medicine.

University News.—Tulane University of Louisiana School of Medicine, New Orleans, has received as a gift the medical library of the late Dr. William H. Oliver, Bryan, Texas, a graduate of the class of 1890.—Felix Brümmer, Ph.D., has been appointed assistant professor of sociology at the School of Social Work, Tulane University of Louisiana; he will conduct courses in child welfare. Dr. Brümmer came from South Africa to the United States and spent the past two years at the University of Chicago.

MINNESOTA

Report on Cancer Survey.—Although the general death rate of Minnesota is declining, the death rate from cancer has shown a steady increase in the last twenty years, according to a cancer survey recently completed by the American Society for the Control of Cancer at the invitation of the Minnesota State Medical Association. Since 1912 there have been but three years in which the cancer death rate was lower than in the preceding year and such slight decreases have been followed by a rise to a higher point than the one preceding the decrease. During the five years ended with 1931 there was an increase of more than twelve per hundred thousand in the death rate, while during the twenty years, 1912-1931, the rate increased from 70.1 to 124.2 per hundred thousand. The latter rate was estimated on the 1930 population of 2,563,953, in which a total of 3,199 cancer deaths occurred. The number of living cases in 1931 was estimated to be 9,597, or three cases for each physician in the state. Sixty-one hospitals, with a bed capacity of 8,102, cared for 170,065 adult patients in 1931, of whom 6,460, or 3.7 per cent, had cancer. These figures, however, include the Mayo Clinic. When nonresidents were subtracted, the total remained 132,243, with 3,429 cancer patients. The latter figures give a cancer admission rate of 2.6, which is more nearly a true picture of the cancer situation in Minnesota. The largest percentage of cancer patients in any hospital was 9.8 and the lowest was 0.3. In this group of sixty-one hospitals, 15 per cent of the cancer patients died in the hospitals, while the deaths from all admissions were 4 per cent. But 30

per cent of the cancer deaths in Minnesota in 1931 took place in the hospitals of that state. It was estimated that 6,460 cancer patients were treated in 1931 in the general hospitals of the state having a listed capacity of thirty beds or more each; of this number 975 died. Minnesota has only one hospital devoted exclusively to the treatment of cancer and allied diseases, the Cancer Institute of the Minnesota General Hospital. Twenty-two hospitals in Minnesota are without laboratories for the diagnosis of tumor tissue. Nine hospitals were found to have x-ray apparatus of 200,000 volts or more and eight had apparatus with a capacity between 150,000 and 200,000 volts. A total of 4,512.3 mg. of medical radium was reported. The report recommended education of physicians throughout the state in the recognition and treatment of malignancy, with the further suggestion that the state department of health actively engage in a cancer education program among the public by the distribution of literature. The organization of local committees to cooperate with a permanent state cancer committee was recommended, as well as the establishment of special cancer services at the various medical institutions of the state. It was also suggested that a division of cancer control should be developed in the state department of health. Cooperating agencies in this survey were the state medical association, the Minnesota Hospital Association, the state department of health and the University of Minnesota.

MISSOURI

Hospital News.—With the transfer of patients to the new Firmin Desloge Hospital, St. Mary's Infirmary, St. Louis, became a hospital for Negroes. It was recently reopened with a staff of forty-seven Negro physicians.

Physician Honored.—Dr. William Ellery, La Grange, was honored, July 31, when several hundred people gathered in a public park to observe his seventy-ninth birthday. Following the dinner, a program of entertainment was offered, and a purse of \$79 presented to Dr. Ellery.

Communicable Disease Regulations.—An advisory committee to the St. Louis Health Department has been appointed to assist in the revision of rules for the control of communicable diseases. Members of the committee are Dr. Paul J. Zentay, assistant health commissioner, chairman; Jacques Bronfenbrenner, Dr.P.H., Drs. Jean V. Cooke, Moyer S. Fleisher, Theodore C. Hempelmann, Ralph S. Muckenfuss and John Zahorsky.

NEBRASKA

Annual Registration Due October 1.—All practitioners of medicine and surgery holding licenses to practice in Nebraska are required by law to register annually, on or before October 1, with the department of public welfare and to pay a fee of \$1. A license expires if the licentiate fails to register. The department, however, suspends action for thirty days. At the expiration of that period, if the registration fee and a penalty of \$1 have not been paid, the license is revoked.

Society News.—Dr. Eldridge L. Eliason, Philadelphia, addressed the first fall meeting of the Omaha-Douglas County Medical Society, September 6, on "Individuality in Treatment of Fractures."—At a meeting of the Cedar-Dakota-Dixon-Thurston-Wayne Counties Medical Society in Winnebago, August 4, the speakers, all from Omaha, were Drs. Francis J. Bean, on "Our University Hospital"; Alfred J. Brown, "The Thyroid Gland," and John J. Keegan, "Diagnosis of Brain Tumor."—Speakers before the Custer County Medical Society at Callaway, August 8, were Drs. Floyd S. Clarke, Omaha, on "Pneumonia in Children"; Karl S. J. Hohlen, Lincoln, "End-Results of Brain Injuries," and Claude A. Selby, North Platte, "Medical Economics."

NEW JERSEY

Medical Relief Policy Adopted.—In accordance with a resolution adopted at the annual session of the Medical Society of New Jersey, a medical advisory committee to cooperate with the State of New Jersey Emergency Relief Administration has been appointed by the state director of relief and has drawn up a plan for medical relief. The committee will consider jointly with the relief administration questions involving the interests of the medical profession, will aid in the interpretation of these policies to physicians and the public, and in organization of county advisory committees. Members are Drs. Charles H. Schlichter, Elizabeth; Christopher C. Beling, Newark, and Spencer T. Snedecor, Hackensack. In the plan for handling relief, preservation of personal relationship between physician and patient was held paramount. Free choice of physician and hospital is permitted to all applicants, and according to the agreement the Emergency Relief Administration may

submit rosters of physicians but not the name of any one physician. Authorization for medical care is to be issued on special forms, except that in emergencies authorization may be given by telephone to be followed immediately by the written order. The order provides for two weeks' care not involving more than ten visits or an expenditure of more than \$20. Further care must be authorized by renewal of the order only after investigation of the case in the home. Medical care for chronic or prolonged illness is to be handled on an individual basis but in general is to be limited to one visit per week for three months. In obstetric cases the Emergency Relief Administration agrees to pay for authorized services in the home not more than \$25, which shall include at least three prenatal office visits, delivery and the necessary postnatal care. All prescriptions for necessary drugs and medicines must be filled from the National Formulary or the U. S. Pharmacopeia or from a hospital formulary; no proprietary remedies will be paid for. Procedures to be followed in special cases of emergency, unusual extra services, operations, submitting of bills and relations with medical societies and health agencies were also outlined in the committee's plan.

NEW YORK

Society News.—The annual meeting of the Seventh District Branch of the Medical Society of the State of New York will be held in Rochester, September 21, with the following speakers:

- Dr. Royd R. Sayers, U. S. Public Health Service, Washington, D. C., Effects of Breathing Dust, with Especial Reference to Silicosis.
- Dr. Charles Gordon Heyd, New York, Mechanism and Clinical Interpretation of Jaundice.
- Dr. Byrl R. Kirklin, Rochester, Minn., Diagnosis of Pulmonary Tuberculosis.
- Dr. Arthur J. Bedell, Albany, Medical Ophthalmoscopy, the Connecting Link Between the Physician and the Specialist.
- Dr. Fred H. Albee, New York, Bacteriophage in Wound Treatment.

New York City

Outbreak of Food Poisoning.—According to the New York Times, about 150 employees of Dun and Bradstreet, Inc., became ill of food poisoning after luncheon in the company cafeteria, August 23. Twenty-two were taken to hospitals. Eight ambulances from Beekman Street, Gouverneur, Bellevue, St. Vincent's and Broad Street hospitals were sent to the building, where twenty interns, a group of nurses and several squads of police worked five hours helping the sick to hospitals or to their homes. The city health department began an investigation of egg salad sandwiches, which were suspected of being the cause. The salad was made at home by an employee of the cafeteria and brought to the building in wooden tubs.

The Sixth Graduate Fortnight.—The sixth annual Graduate Fortnight of the New York Academy of Medicine will be held, October 23 to November 3, on the general subject "Disorders of Metabolism." Clinics will be held each afternoon at two of the following hospitals: Bellevue, Beth Israel, Mount Sinai, Fifth Avenue, Lenox Hill, Post-Graduate, Presbyterian, Montefiore, St. Luke's, New York, Polyclinic, Rockefeller Institute, Hospital for Joint Diseases and the Neurological Institute. The following program of addresses has been arranged for the evening sessions at the academy building:

- Dr. Eugene F. Du Bois, Total Energy Exchange in Relation to Clinical Medicine.
- Dr. Harold E. Himwich, New Haven, Conn., The Metabolism of Fever.
- Dr. Walter W. Palmer, Metabolism in Hyperthyroidism and Hypothyroidism.
- Dr. Frank H. Lahey, Boston, Surgical Treatment of Hyperthyroidism.
- Donald D. Van Slyke, Ph.D., Acidosis and Alkalosis.
- Dr. Joseph C. Aub, Boston, Mineral Metabolism.
- Dr. Alexander Ashley Weech, Fluid Distribution and Edema.
- Dr. Dana W. Atchley, Dehydration and Medical Shock.
- Erwin Brand, Ph.D., Congenital Anomalies of Metabolism with Special Reference to Cystinuria and Myopathies.
- Dr. Leopold Lichtwitz, formerly of Berlin, Gout and Its Therapy.
- Dr. Albert A. Epstein, Clinical and Biologic Considerations of Obesity and Certain Allied Conditions.
- Dr. John P. Peters, New Haven, Conn., A Critical Estimate of the Value of Laboratory Procedures in Disorders of Metabolism.
- Henry C. Sherman, Ph.D., General Review of Our Knowledge of Vitamins.
- Dr. Samuel W. Clausen, Rochester, N. Y., Disorders Due to Moderate Deficiency of Vitamins.
- Dr. Oscar M. Schloss, Nondiabetic Ketosis in Children; Dehydration in Infants.
- Dr. Henry L. Jaffe, Hyperparathyroidism and Its Relationship to Diseases of Bone.
- Charles E. Bodecker, D.D.S., Metabolic Disturbances in Relation to the Teeth.

Dr. Rollin T. Woodyatt, Chicago, will direct a round table conference on diabetes, Monday evening, October 30, in which Drs. Priscilla White, Boston, Herman O. Mosenthal and Henry Rawle Geyelin will take part. Dr. Wilder Penfield, professor of neurology and neurosurgery, McGill University Faculty of

Medicine, Montreal, will deliver the Wesley M. Carpenter Lecture, Thursday evening, November 2, on "The Influence of the Diencephalon and Hypophysis upon the General Autonomic Functions." Concurrent with the Graduate Fortnight and for a week thereafter an extensive exhibit showing the various aspects of metabolic disorders will be on view. Some sections will be demonstrated by lectures. Among subjects to be covered are dietary constituents and their derivatives, actions of drugs and therapeutic measures, general and special pathologic metabolism and laboratory methods.

NORTH DAKOTA

Illegal Practitioner Fined.—F. J. Gath, who is said to have treated the sick in the district about his home for several years in violation of the medical practice act, was finally convicted in March, sentenced to serve thirty days in the county jail at Cando and fined \$100 and in addition to pay \$100 costs. He was released from the jail, May 5, on his agreement to pay the fine at the rate of \$10 a month, beginning August 1.

OHIO

Society News.—Dr. Dewey H. Reys, Cincinnati, among others, addressed the Adams County Medical Society at Blue Creek, August 16, on diagnosis and treatment of thyroid disease. —Dr. Frank E. Stevenson, Cincinnati, addressed the Greene County Medical Society, Xenia, August 3, on spinal meningitis. —Drs. Roy D. Arn, Springfield, and Vernon L. Hart, Dayton, addressed the Miami County Medical Society, Piqua, September 1, on "Relief of Pain by Neurosurgical Measures" and "Fractures of the Elbow," respectively.

Personal.—Dr. James J. Marek, Cleveland, won for the second time the president's cup for low gross score at the annual golf tournament of the Cleveland Academy of Medicine, July 26. —Dr. Frank N. Gordon has been transferred from the Veterans' Administration Hospital at Dwight, Ill., to succeed the late Col. Vernon Roberts at the hospital in Dayton. —Dr. Thomas Field Humphrey, Cincinnati, has been appointed resident physician at the Ohio Soldiers' and Sailors' Orphans' Home at Xenia, to succeed Dr. Asa C. Messenger, who resigned in June. —Dr. Mary E. Tracy, district physician for the health department of Cincinnati since 1906, will retire, October 1.

PENNSYLVANIA

Cancer Meeting.—The Cancer Commission of the Medical Society of the State of Pennsylvania held its annual meeting in Oil City, August 14. At the morning session diagnosis and treatment were discussed by Drs. Chevalier and Chevalier Lawrence Jackson, Philadelphia; William H. Mayer and Albert J. Bruecken, Pittsburgh. In the afternoon Dr. William E. Lower, Cleveland, spoke on "Management of Malignant Tumors of the Kidney," and Dr. Jonathan M. Wainwright, Scranton, chairman of the commission, on "Work of the Cancer Commission," and Dr. Joseph Colt Bloodgood, Baltimore, conducted a clinic on tumors of the breast, bone and oral cavity. There was also a round table conference and a special session for dentists. At an evening banquet Dr. John C. A. Gerster, chairman of the New York cancer commission, spoke on "Cancer Education of the Laity." Dr. Ford M. Summerville, Oil City, was toastmaster.

TENNESSEE

Ninety-Nine Years for Murder of Physician.—Three men charged with killing Dr. J. A. Clark of Morrison, during a bank robbery at Morrison, July 25, were convicted by a circuit court jury at McMinnville, August 24, and sentenced to ninety-nine years each in prison. Dr. Clark was shot down by one of the robbers when he attempted to thwart the robbery. The men also received sentences of twenty years each on the robbery charge.

VIRGINIA

Society News.—Among speakers at a meeting of the Medical Society of Northern Virginia, August 15, were Drs. Charles E. C. "The Physician's Relation to the Health of Children"; Lawrence T. Royster, Funsten, University, "Congenital Deformities and the Orthopedic Treatment of Infantile Paralysis." —Dr. James B. McElroy, Memphis, Tenn., was a guest speaker at the semiannual meeting of the Southwestern Virginia Medical Society in Wytheville, September 15. Dr. McElroy discussed Bright's disease, and among Virginia physicians who spoke were Drs. Elbyrne G. Gill, Roanoke, on bronchocopy; James P. King, Radford, fever therapy in dementia paralytica, and Alexander M. Showalter, Christiansburg, cesarean section.

GENERAL

Meeting of Obstetricians and Gynecologists.—The annual meeting of the Central Association of Obstetricians and Gynecologists will be held in Milwaukee, October 5-7, with headquarters at the Hotel Schroeder. Dr. Frank W. Lynch, San Francisco, will be the guest speaker, reporting "Five to Seventeen Year Follow-Up of Cervical Cancers." An afternoon and evening will be devoted to clinics and demonstrations at the Marquette University Medical School.

Safety Congress.—The twenty-second Annual Safety Congress will be held in Chicago, October 2-6, with headquarters at the Stevens Hotel. Three general sessions will be sponsored by the industrial health section: the first on dermatitis and other skin disorders; the second on a practical medical program for industry, and the third on the eye in relation to industry. Dr. Harold S. Hulbert, Chicago, will conduct early morning classes in practical psychology, on "Mental Training for Safety."

"Man in White"—A Play About Physicians.—The Group Theater in New York, in association with Sidney Harmon and James R. Ullman, announce the forthcoming production of a new play called "Man in White" at the Plymouth Theater, New York, September 25. According to the announcement, the theme of the play is derived from certain precepts of Sir William Osler expressed in "Counsels and Ideals." The first thought is that "in his professional relations, though divided by national lines, there remains the feeling that he belongs to a guild which owes no local allegiance, whose work is in the world." The second is a passage in which Osler adjured young physicians to develop "the faculty of isolating yourself from pursuits and pleasures incident to youth. The majority of us have to wrestle hard with the original Adam and find it no easy matter to scorn delights and live laborious days." The scene of "Man in White" is in a modern hospital. The leading players will be Alexander Kirkland, Margaret Barker and J. Edward Bromberg.

Congress of Radiology.—A joint meeting of the American Roentgen Ray Society, the Radiological Society of North America, the American Radium Society and the American College of Radiology, to be known as the American Congress of Radiology, will be held in Chicago, September 25-30, with headquarters at the Palmer House. At the opening general meeting, Monday morning, September 25, Dr. Austin A. Hayden, president of the Chicago Medical Society, will give an address of welcome and there will be addresses by Rufus C. Dawes, president, A Century of Progress Exposition; Drs. Hugh S. Cumming, surgeon general, U. S. Public Health Service; Morris Fishbein, Chicago, editor of THE JOURNAL; Henry K. Pancoast, Philadelphia, president, American Congress of Radiology, and Franklin H. Martin, Chicago, director general, American College of Surgeons. Among a large number of speakers in the scientific sessions will be the following:

- Dr. Pedro L. Farinas, Havana, Cuba, Serial Bronchography in the Early Diagnosis of Bronchial Carcinoma.
- Drs. Fred Jenner Hodges and Carleton Barnhart Peirce, Ann Arbor, Mich., Roentgen Examination of the Heart.
- Charles C. Lauritsen, Ph.D., Pasadena, Calif., Energy Considerations in Medium and High Voltage Therapy.
- Dr. Stafford L. Warren, Rochester, N. Y., Preliminary Study of Artificial Fever upon Hopeless Tumor Cases.
- Albert Bouwers, Sc.D., Eindhoven, Holland, New Principles Regarding the Design of X-Ray Apparatus.
- Dr. Lewis Gregory Cole, New York, The Small Intestines: Correlation of Anatomic, Pathologic and Roentgenologic Findings.
- Drs. Eugene T. Leddy, Earl I. L. Cilley and Byrl R. Kirklin, Rochester, Minn., Dangers of Fluoroscopy and Methods of Protection Against Them.
- Dr. Douglas Quick, New York, Management of Cancer of the Mouth and the Cervical Lymphatics.
- Dr. J. Ernest Gendreau, Montreal, Quebec, Three Years of 300 Kilovolt Cancer Therapy.
- Dr. Gordon E. Richards, Toronto, Ontario, Treatment of Chest-Wall Secondaries in Breast Carcinoma—A Preliminary Report of a New Technic.
- Dr. Joseph Colt Bloodgood, Baltimore, Preoperative Irradiation with X-Rays or Radium: Its Diagnostic and Therapeutic Advantages.
- Dr. José A. Saralegui, Buenos Aires, Argentina, Cholangiography with New Technic and Results.
- Dr. Carlos Heuser, Buenos Aires, Argentina, Metrorrhagia from the Radiologic Point of View.
- Dr. Jose Baca Gutierrez, Mexico City, Radiotherapy in Mexico.
- Drs. Alexander H. Pirie, Montreal, and Arne Torkildsen, Oslo, Norway, Normal Appearance of the Ventricles of the Brain and the Displacements Caused by Temporal Lobe Tumors.
- Dr. Filiberto Rivero, Havana, Cuba, Classification of Tuberculosis.

Dr. Evarts A. Graham, St. Louis, will deliver the Caldwell Lecture of the American Roentgen Ray Society, Wednesday evening, on "Diagnosis and Treatment of Carcinoma of the Lung." Dr. James Ewing, New York, will give the Janeway Lecture of the American Radium Society, Friday evening.

Another Impostor.—A man about 55 or 60 years of age, 5 feet 11 inches tall, clean shaven, of sandy complexion and with large, irregularly placed teeth, is reported by a physician in the Middle West as being an impostor. The man in question speaks with what has been described as a middle western accent. He is neatly dressed, gives the impression of good breeding, and is convincing and apparently honest in his approach. He first called on Dr. A, a professor of pathology in a midwestern university, claiming to be the brother of Dr. B, another professor of pathology in an eastern institution. He made no attempt to ask Dr. A for money but he learned during the visit that Dr. A was about to go to Maine for a vacation. It appears the man then called on Dr. C, still another professor of pathology in an eastern medical school. His story to Dr. C was that he was the brother of Dr. A and had had an automobile accident and needed money to get to his brother, Dr. A, who was in Maine. Dr. C, knowing that the doctor was in Maine, gave the man sufficient for his alleged needs.

LATIN AMERICA

Typhus in Chile.—Dr. John D. Long, traveling representative of the Pan American Sanitary Bureau, spent the week of August 6-13 in Santiago, Chile, assisting Chilean health authorities in the investigation of an epidemic of typhus. Thousands of vagrants have been disinfected in public cleansing stations; public buildings have been scrubbed with disinfecting fluid or fumigated, and sanitary cordons have been thrown around the worst areas, newspapers report. Chilean newspapers have carried on campaigns of health education and urged the citizens to adopt better diets.

FOREIGN

Celebration of Ramazzini Tercentenary.—The Italian section of the Permanent International Commission on Labor Medicine and the Italian Society of Industrial Medicine will sponsor a celebration of the third centennial anniversary of the birth of Bernardino Ramazzini, October 4, at the Clinica del Lavoro, University of Milan, Italy. Representatives of most of the countries of Europe will attend and will discuss the influence of Ramazzini on industrial medicine in the various states. The following day a special meeting devoted to discussion of ancylostomiasis will be held at the clinic, with the foreign physicians as participants. In addition to the Milan celebration, the universities of Modena, Padova and Parma, with which Ramazzini was associated at various times, will hold ceremonies in his honor, October 6. American physicians who may be able to attend these observances are requested to notify Dr. Emery R. Hayhurst, 1108 State Office Building, Columbus, Ohio, member for the United States of the Permanent International Commission on Labor Medicine.

Executive Committee of Medical Society Resigns in Protest Against Regulations.—A circular issued by the executive committee of the Medical Society of Hamburg reads as follows:

The authorized representative of the federal commissar in the medical top organizations, Dr. W. Holzmann, has charged the executive committee to include the following regulations into the statutes of the organization:

1. Only Aryans can be full members, non-Aryans can remain associate members.
2. Only full members may have the floor for lectures or oral comments.
3. Only full members have the right to vote in society meetings.

The committee feels bound to the existing laws of the society, according to which a statute change of that sort is not possible; consequently the committee has decided to resign from its respective offices in a body.

For the period of transition the committee has empowered Messrs. Treplin, Scholz and Reye to assume charge of the business of the society.

THE COMMITTEE: KÜMMEL,
MARR, TREPLIN, SCHOLZ, REYE.

CORRECTION

Bernardino Ramazzini.—In THE JOURNAL, August 12, page 528, appeared a current comment relative to Ramazzini, in which the date of his birth was given as Nov. 5, 1633. Prof. Luigi Devoto writes from Italy to thank THE JOURNAL in the name of the International Commission of Industrial Medicine and of the Società Italiana di Medicina del Lavoro, and to say that Ramazzini was born not on November 5 but on October 4.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 26, 1933.

Spontaneous Subarachnoid Hemorrhage

It is only in recent years that attention has been called to the fact that spontaneous subarachnoid hemorrhage is a frequent cause of coma. In reviewing the literature in 1924, Dr. C. P. Symonds of Guy's Hospital found that in only eleven cases could the source of hemorrhage be traced to a ruptured aneurysm, but he expressed the view that with more careful dissection at necropsies a much greater number of cases would be found due to this cause. This opinion has been confirmed by later writers. Dr. L. P. E. Laurent, medical registrar of University College Hospital, has found in a series of nine cases, admitted to the hospital and recorded in its magazine that the hemorrhage could be traced to an aneurysm in no fewer than seven cases. It seems to be generally agreed that these aneurysms are congenital; i. e., that they arise at a point of weakness in the arterial wall because of an error of development, usually at the bifurcation of one of the branches of the circle of Willis. Such aneurysms are not infrequently found intact at necropsy. Only when they rupture are symptoms produced. This may occur at any age but most frequently in the fifth decade. Four of the present series fall within this, and the extremes of age were 26 and 80 years. The usual history is that the patient, while in good health, is seized with violent headache, collapses and passes into coma within a few minutes. Exceptionally the loss of consciousness is delayed for a few hours. The condition is usually fatal, but if the patient recovers he may say that he felt something give way in his head. The temperature is raised to about 100 F. The pupils may be contracted or unequal but are of little diagnostic value. There are signs of meningeal irritation, and Kernig's and Brudzinski's signs can often be elicited. The diagnosis is established by finding blood evenly distributed throughout the cerebrospinal fluid obtained on lumbar puncture. In regard to treatment, apart from the general measures that apply to any comatose patient, the point to be decided is when to perform lumbar puncture. It must first be done to settle the diagnosis. Afterward, if he is improving, the patient should be left to his own resources. But when a falling pulse rate indicates a dangerous rise of intracranial pressure, lumbar puncture should be performed for the relief of tension.

Prompt Action Against the Potato Pest

Prompt measures have been taken by the ministry of agriculture against the potato pest, known as the Colorado beetle. Aware of the devastation caused by the beetle in France and of its gradual approach to channel ports, an organization has been ready for twelve months to deal with any invasion. Notification of the presence of the beetle at Tilbury, was received at noon one day and the vanguard of "an arsenical army," dispatched during the night, was at work next morning. The arsenic is applied both as a powder and in liquid form. Large sprayers capable of treating eleven rows of potatoes at a time are engaged in a task that has to be completed in ten days. The effect is to poison the beetle without affecting the tubers. Should larvae be found on the ground, fumigation of the soil will no doubt be decreed. In countries where the beetle has established itself, it has been found virtually impossible to eradicate it and the only way to obtain potato crops is to spray during the whole season. The potatoes on the affected allotment have been dug up and the plants have been burned. The soil of the affected area has been fumigated with carbon

bisulphide in order to destroy any beetles that may have gone into the ground. As a precaution against any beetles having spread farther afield, all the potato crops within a radius of ten miles are being carefully inspected.

A Successor to Sir Arthur Keith

The council of the Royal College of Surgeons is advertising all over the English-speaking world the vacancy caused by the resignation of Sir Arthur Keith as conservator of the museum and director of research. Advertisements have been sent not only to the English medical journals and the *Times* but to the Australian, New Zealand and Canadian medical journals and to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. The duties include charge of the museum in all departments, the laboratory at Lincoln's Inn Fields and the Buckston Browne research farm. The conservator has to report to the Museum Committee on all objects offered either as donations or for purchase or in exchange to complete the catalogue of the collection and to continue and correct it from time to time. He has to register particulars of every specimen acquired by the college and to classify and arrange all additions to the collection. His whole time is to be at the disposal of the college and he is required to deliver lectures illustrated by the contents of the museum. The salary offered is \$5,500 per annum with an honorarium for lectures, which amounts to about \$500. Grants are also made to defray expenses in journeys abroad to inspect other collections. All applications must be received by October 7.

Unemployment Has No Unfavorable Effect on Nutrition of Workers

In the house of commons, the minister of health stated that no question gave him more anxious concern than that of nutrition. How was the country standing the long depression and diminution of its resources, both public and private? Unemployment inflicted much deprivation and hardship on large sections of the community. The ministry of health had carried out a widespread inquiry with the assistance of physicians and statisticians on the nutrition of the people. The figures showed that mortality in the whole country, and in the depressed areas in particular, was steadily declining—striking testimony to the maintenance of the general health. In 1932 the death rate of the country was 12 per thousand, equal to the average rate from 1921 to 1930. There was a remarkable decrease in the death rate of children. That was the brightest achievement of the country's health services. Since 1907 the infant mortality rate had been halved, a marvelous achievement for the infant welfare service.

There was no evidence of any increase of morbidity. The figures for such diseases as pneumonia and bronchitis were going down and, most important of all as a barometer of health and nutrition, the death rate from tuberculosis was falling. The death rate per million from all forms fell from 896 in 1931 to 838 in 1932. There had been a particularly marked fall in the incidence and mortality of nonpulmonary tuberculosis, which was the children's particular form. The figures of maternal mortality were less favorable. Maternal mortality last year was 4.11 per thousand births and this year 4.21. To deal with this matter, better education of the mother by antenatal care and of the midwife was essential. Meanwhile he would endeavor to raise the standard of maternity services. The number of infant welfare centers and antenatal clinics was steadily increasing. They increased by 250 between 1931 and 1932.

New Safety Devices for Miners: Hats and Gloves

The eleventh annual report of the Safety in Mines Research Board states that progress has been made in researches into the prevention of falls of ground and haulage accidents. A subject that is evoking interest in the industry is the study of

the value of protective equipment, such as hard hats, goggles, and special boots with a view to reducing the number of accidents that occur below ground. Accidents to the hands, feet and eyes, giving rights of compensation, number about 80,000 a year. Not all are caused by falls of ground and a considerable number could be eliminated by wearing protective equipment. Cases are reported in which workmen were saved from serious injury, if not death, by wearing a hard hat. The men usually experience no discomfort from wearing the hats and have expressed appreciation of the protection. The hats at present being experimented on are of American manufacture and expensive when they reach this country, but it is expected that suitable English hats of less cost will be available this year. The introduction of gloves is also meeting with success. They are being used by loaders at conveyor ends and by coal cutting machine men, rippers and pan shifters. So keen is the interest in gloves that there is no difficulty in carrying out experiments with them. Specially designed safety boots and goggles also are now available.

Physician Receives \$60,000 for Loss of Use of Hand

At the Gloucester assizes a Cheltenham physician brought action against a publisher's salesman for injury in an automobile accident. Something went wrong with the physician's car and he got out and opened the hood and looked at the carburetor. The defendant was driving in the opposite direction and pulled out from behind a larger car and attempted to pass it. In so doing he struck the physician and, though the latter was seriously injured, he did not attempt to stop. He did not return to the scene of the accident until three quarters of an hour later, when he refused to give any explanation to the police. He alleged that the physician walked suddenly out from behind his car, which was untrue. The injury rendered the physician's right hand useless. He could not even write a prescription, and after a year there was no real improvement. Mr. Hey Groves, professor of surgery in the University of Bristol, stated in evidence that he could give no definite promise that the hand would ever be right again. The defendant stated that he had not the slightest idea that he had touched any one and therefore drove on. The jury awarded the physician \$60,000 damages.

PARIS

(From Our Regular Correspondent)

Aug. 2, 1933.

Vaccination Against Filtrable Viruses

Professor Lignières, who has attracted attention by his persistence in being the only scientist who regards the BCG vaccine of Professor Calmette as not free from danger, has been carrying on, of late, research on vaccination against diseases produced by filtrable viruses. While his research has considered only diseases of animals, it has an important bearing on general biology and marks an advance over the methods heretofore employed. Vaccination against diseases caused by a filtrable virus, by means of a specific serum, confers a strong immunity, but the duration of the immunity is only a few days. The method employed consists in injecting under the skin an amount of specific serum that is rather large with relation to the weight of the subject, and, at another point, a small quantity of virus. This vaccination is performed in a single stage. It provokes reactions that are sometimes rather severe and leaves the organism entirely refractory to the virus employed. At present the number of diseases in which this method is effective is rather restricted. Lignières has made known to the Academy of Sciences a new method of vaccination against diseases due to a filtrable virus, the principle of which lies in the introduction of the virus into a small area of the skin, rendered resistant, but not refractory, to the virus by the intracutaneous and subcutaneous injection of small quantities of specific serum. Under

these conditions the virus inoculated along with a few cubic centimeters of the serum should not become generalized; it is cultivated on the spot and produces immunity. If one is inclined to call this method of immunization serovaccination, one should not confuse the two methods, for several reasons, two of which may be mentioned: In the method of Professor Lignières, the quantity of serum to be employed is rather independent of the weight of the subject; it depends solely on the activity of the virus. The same quantity (1 cc.) may be used in aphthous fever for a calf as for an adult animal. In serovaccination the quantity of serum to be employed depends on the weight of the subject. For example, in swine plague, from 15 to 20 cc. of serum is sufficient for young animals, whereas adult animals require from 60 to 80 cc. On the other hand, one sometimes observes violent reactions following serovaccination with the method of Professor Lignières but, if it has been properly done, immunity is acquired without elevation of temperature, without the slightest change in the general condition and without any specific manifestation, which is one of the most peculiar and newest features of this vaccination. The experiments of Lignières have included thus far three diseases of animals due to a filtrable virus. The results have been excellent. All the animals vaccinated were immunized with but few exceptions in the case of aphthous fever in bovines. All the controls not vaccinated either succumbed or acquired the disease. The method has as yet one drawback; namely, in order to obtain absolute immunity it is necessary to apply three vaccinations at intervals of from ten to twelve days. The result is worth the trouble; for the method of Dr. Lignières confers immunity for several months and does not cause the slightest reaction. The method would be much more valuable if it could be applied to diseases in man. But since the research involves the inoculation of a living virus, it will be readily understood that great caution must be exercised. Lignières thinks that careful experiments on monkeys will possibly enable him to discover the "laws" governing harmless and effective vaccinations, notably for poliomyelitis and yellow fever.

The Title of Doctor of Medicine in Danger

In France, the title of doctor is bestowed by the facultés de lettres, the facultés de droit and the facultés de sciences, as well as by the facultés de médecine. But in current speech the title doctor is commonly reserved to doctors of medicine. When one speaks of doctor, without further qualification, only a physician is meant. For this reason, persons desiring to practice medicine illegally always seek to procure a doctor's title given by some other institution, in order to create confusion in the public mind. The pharmacists, most of whom prescribe illegally to the public frequenting their shops, have finally succeeded in getting a doctor's diploma established, with which they make considerable showing before their clientele. But the law requires them to state plainly that they are doctors of pharmacy. There are also doctors of veterinary medicine, some of whom likewise seek to deceive the public. The diploma of veterinarians must, however, be bestowed by a faculté de médecine before an examining board comprising professors of physiology, bacteriology, hygiene and materia medica, together with professors of a recognized large veterinary school. Here too the law requires that the holder of the veterinary title shall announce himself as a "doctor of veterinary medicine"; but that fact does not prevent him, if occasion arises, from giving consultations to the public, which applies to him the term "doctor." The dentists who have not pursued medical studies are also seeking to get a doctorate of dental science established, but thus far the dentist-physicians have succeeded in preventing this and have suggested that, on the contrary, the practice of odontology be reserved solely to doctors of medicine who have received special supplementary instruction. The syndicates of the dentist-physicians and the syndicates of the nonmedical

dentists are at loggerheads, both having powerful political allies, while the minister has not found it convenient to tackle the question. More serious trouble has arisen. A group of practitioners of dental electroradiology has established a technical school, which also is granting a doctor's diploma, and the holders, without having pursued medical studies, can easily practice medicine illegally by treating patients directly, without the latter having been so much as seen by a doctor of medicine, as the law requires. The medical syndicates have protested against this growing abuse; but not only does the minister fail to take account of their protests but the syndicate of the dental radiologists even went so far as to organize an official dedication of the school, at which the various ministers, the municipal council of Paris and the prefect of police, not comprehending the situation, were represented by delegates, who delivered a number of addresses in praise of the new institution and the services it was rendering the people. Thus, they simply encouraged the illegal practice of medicine.

BUCHAREST

(From Our Regular Correspondent)

Aug. 24, 1933.

The Improvement of School Medical Inspections

A movement is on foot to extend the methods of school inspection. It has been initiated by Dr. A. M. Marinescu, who suggests the establishment of national, state and local boards of school hygiene under the direction of specially qualified medical health officers. The functions of a national board would be to provide plans for sanitary school buildings and school furnishings, to conduct civil service examinations for school physicians, and to publish instructions from time to time. The state boards should have the power to choose proper sites for schools, to frame and enforce laws governing school hygiene, to close insanitary school buildings, to insure the exclusion of degenerate or criminal children from state schools, and to keep records of the progress and development of school children. The local board should consist of business men and physicians. They should keep records and keep in touch with the national and state boards. Every child in each school should undergo a complete physical examination. The functions of the board would also include the distribution of literature bearing on hygiene and also the instruction of parents as to the needs of each child, based on the physical examination.

Reactions Following the Administration of Arsenic Preparations

Dr. Leontine Munteabu, director of the public health laboratories at Oradea, at a meeting of the local medical society, discussed the reactions sometimes associated with the arsenical treatment of syphilis. The cause may be the toxicity of the drug, a broken vial whose contents are oxidized, using a vial which has been open for one or two days, or it may be in the method of application or the intolerance of the subject or all combined. The operator should take into account the reaction to previous injections, whether the disease is recent, and whether there has been any indication of a reaction on the part of the nervous system or viscera. The urine should be examined before every injection, and special caution is necessary when it contains bile pigments, albumin or much sediment. The practice of using big doses is highly dangerous and must not be attempted. The injection should always be made extremely slowly, and the least untoward sign should be watched for. The physician should keep his record of these cases written in full to date, and a solution of epinephrine and sodium thiosulphate should always be at hand to combat any sign of intolerance, particularly angioneurotic reactions.

Increase in Number of Cases of Neurasthenia

At a recent meeting of the Medical Society of Bucharest, Dr. Ramniceanu expressed the opinion that cases of neurasthenia were rapidly increasing in number. He showed that a definite percentage of the symptoms were illusory or hallucinatory in character and stated that practically every patient had one symptom, complaint, apprehension or fear, which predominated over all others. When this one predominating symptom was overcome or removed by education, by medicinal treatment or by psychoanalysis, all lesser symptoms either abated or were entirely relieved. He cited cases from his own practice, giving the chief obsession in each case and the educational or other means used to remove it. In Dr. Ramniceanu's view the majority of patients were made worse by the administration of modern drugs. It is essential to treat the mind rather than the body.

Radium at the Bucharest University Hospital

At the quarterly meeting of the board of the university clinics it was reported that in response to urgent representations the purchase of 40 mg. of radium for the treatment of cancer had been authorized, in addition to 25 mg. already on hand. This amount has cost about 500,000 lei (approximately \$4,000). Last year more than 300 cancer cases were treated as inpatients and many more as outpatients.

BERLIN

(From Our Regular Correspondent)

Aug. 7, 1933.

Relation of Orthopedics to Surgery

A discussion has arisen between surgeons and orthopedists concerning the independence of the latter with respect to university instruction. Some time ago, the Deutsche Orthopädische Gesellschaft submitted to the convention composed of delegates of the medical faculties its views on the organization of medical courses and the requirements for the final examinations. It was emphasized that orthopedics has developed into an independent subject, as is evidenced by the creation of special chairs, extraordinary professorships and "guest courses" at the various universities. Reference was also made to the activities in connection with the rehabilitation of the war injured; the prevention and cure of crippling in association with welfare aid for cripples, which is being administered in more than eighty sanatoriums, with 10,904 beds, together with various clinics with more than 1,000 beds in all; the collaboration in the care of the health of school children, and, particularly, to the combating of bodily defects and deformities in the oncoming generation. According to a recent census there are more than 100,000 cripples in Germany. General practitioners therefore should acquire the most needed orthopedic knowledge. It was suggested that the representative of accident surgery be made "second examiner" in surgery and that in institutions where there is a special representative of orthopedics he should be selected alternately as the examiner in surgery. Attention was called to the solution of the problem in other countries, notably the United States.

The Deutsche Gesellschaft für Chirurgie has now replied to the foregoing demands, which are supported also by the Verband der Berufsgenossenschaften. The plans of the orthopedists are to be subjected to a critical review and the competences of the three disciplines in question are to be sharply demarcated. In view of its history and accomplishments as a main clinical subject, surgery demands that its solidarity be preserved and not broken up into a number of specialties. It is stated that orthopedics has developed into an independent branch of surgery. Its field comprises the disturbances and disorders of the equilibrium and the motor apparatus, and the

prevention and cure of crippling. It is desirable that the larger universities should have a chair of orthopedics. Questions that arise in occupational accidents concern all fields of medicine; but 90 per cent of persons injured in occupational accidents require surgical treatment; for surgery, from the very nature of its field of operation, has always included the surgery of accidents and must continue to do so. Hence, the Deutsche Gesellschaft für Chirurgie warns against the creation of special chairs for the field of medicine dealing with accident insurance and the care of persons injured in occupational accidents. On the other hand, it appears to be in order for the central government to appoint an instructor to give a special course in the "surgery of accidents," as an inherent part of the work of a university surgical clinic.

In view of the present burden of students, it is not advisable to introduce new courses of lectures in orthopedics and special examinations in orthopedics, as the society of orthopedists has demanded. At the government examination, the ordinarius in surgery and a second representative of the surgical specialty should function as the chief examiners, although the instructor in the surgery of accidents might well assist. In institutions where a representative of orthopedics has been serving as an examiner, he may continue to serve in that capacity in connection with the tests in surgery.

The Tribal Distribution of Mental Disorders

The most important types of psychic constitutions are found apparently among all races; but their frequency varies. Ernst Kretschmer of Marburg, who has devoted himself to problems of constitution, calls attention in the *Münchener medizinische Wochenschrift* to the psychiatric variant formations in highly trained families and to characteristic psychiatric racial differences in the populations of Swabia and Old Hesse. In the latter, genuine manias are seldom observed, the few cases found there having originated mostly in other tribes. Here, too, the so-called hypomanic temperament factors are infrequent. The difference, as compared with Swabian patients, for example, is unquestionable; among the Swabians the manias are much less frequent than the depressions but they exist in considerable numbers. Also in paranoiacs, and especially in the "prophets" and founders of sects, with far-reaching programs and speculations, Kretschmer found a difference based on racial origin. He found this group in Swabia to be more numerous and more productive. Here, too, the parallel relationship to the healthy racial aptitudes was evident. Among the intellectual traits of the Swabians, the poetic and philosophical endowments form the largest group and the speculative, metaphysical trend is especially prominent. The more learned the victim, the less typical the psychosis. Even psychoses caused by external factors may present aspects difficult to understand. This association of a psychosis originating in heredity goes much deeper than is commonly assumed. It is not that a morbid process of a definite type penetrates, like a foreign body, different persons and is then colored and changed brighter or darker by them; on the contrary, the fundamental soil, with its racial and familial characteristics, pushes out the peculiar variants of endogenous psychoses from its innermost self. The frequency and special type of a given psychosis appear, among the various tribes, closely connected, from the standpoint of the genes, with the frequency and development of the corresponding factors of the healthy hereditary endowments and temperaments of those tribes.

Aid for Cancer Patients

An agreement was reached, several years ago, between the medical profession and the leagues of the *krankenassen*, with the object of providing more aid for cancer patients. Physicians who treated cancer patients made a report to a center

connected with the *krankenassen*, and through this center aid for patients was provided. To make this welfare aid more comprehensive, a working merger has now been effected, which includes the city, the carriers of social insurance, the medical league of Greater Berlin, the chamber of physicians, the police department, private benevolent hospitals and the faculty of medicine, under the direction of the municipal public health service. This merger provides also for a notification of all cases.

Consultation Centers on Marriage

In THE JOURNAL, August 12, page 535, reference was made to the changes in the marriage consultation centers. One of the first of the new marriage consultation centers, that established by the bureau of eugenics in Thuringia, has been opened. Any person may avail himself of these consultations without charge. Married persons may seek information as to whether their future children will be healthy and possess good aptitudes or whether, by reason of hereditary taints, it would be better to have no further children. Emphasis is laid on the need of young people who are single seeking advice as to whether they are adapted to marriage. Engaged couples are given information as to whether the choice of a partner is favorable from the eugenic point of view, and whether the contemplated marriage is likely to be made unhappy by the later outbreak of hereditary disease. At the first visit to the consultation center, all applicants are instructed how to proceed to secure documentary evidence in regard to their family history. Emphasis is laid on a knowledge of the four grandparents and their descendants, including information in regard to their diseases, peculiar manifestations, performances, and the like. For the determination of Aryan or foreign derivation it is desirable to know the personal history of all progenitors back through the sixteen ancestors of the fourth generation.

The First Course in Race Hygiene

In August, the first course in race hygiene for physicians was organized at the University of Halle. More than 500 physicians, about one third of all the physicians in that area, are taking the course. At the end of one or two years, the government medical commissar has announced, all physicians of Germany will be required to furnish evidence that they have taken such a course. In Saxony a law to that effect has already been enacted; Prussia and the remaining German *länder* will soon follow. Privatdozent Kürten, the director of the course, called attention in his introductory lecture to the trail blazed by America in the field of race hygiene. Measures that scientists of all countries have long since demanded but that have never been carried out Germany will now make a reality. The course as organized consists of: introduction to ethnology, theory of hereditary transmission in man, race hygiene and the recent legislative enactments in Germany in this field.

The German Eugenic Society

Prof. Dr. Ernst Rüdin of Munich, who is associated with the Deutsche Forschungsanstalt für Psychiatrie, has been appointed a representative of the federal ministry of the interior in the Deutsche Gesellschaft für Rassenhygiene. He has assumed the direction of the society and has moved its headquarters from Berlin to Munich. The previous chairman was Prof. Eugen Fischer, director of the Kaiser Wilhelm-Institut für Erblchkeitsforschung and the newly elected rector of the University of Berlin. Rüdin is well known because of his research on the hereditary transmission of mental disorders, which he carried out as director of the genealogical department of the institute. Through the recent death of the American James Loeb, this institution received a bequest of \$1,000,000, as a culmination of many previous gifts during the lifetime of its benefactor.

Marriages

ARTHUR DENTON SEYBOLD, Plainfield, N. J., to Miss Anne Marie von der Groeben of Hanover, Germany, July 8.

LEO HYMOVICH, Stamford, N. Y., to Miss Lillian Estelle Berman of Grand Concourse, September 3.

JOHN CROZIER FAWCETT, Devils Lake, N. D., to Miss Clara Edith Schrag of Starkweather, July 26.

HENRY A. SCOVILLE, Union City, Mich., to Miss Winifred Williams of Grand Rapids, June 28.

JACKSON A. SEWARD, New York, to Mrs. Maidee Hooton Buck of Montclair, N. J., in June.

JAMES NORTH EVANS, Columbus, Neb., to Miss Roberta Prince of Grand Island, recently.

ROBERT SYDNEY SMITH, East St. Louis, Ill., to Miss Helen Kempster of St. Louis, June 10.

P. HARVIE MACFARLANE, Chisholm, Minn., to Miss Marcia Daigneau of Austin, in August.

JAMES HARDIN WALL, White Plains, N. Y., to Miss Louise Holt Baker, July 1.

WILEY DENNIS WOOD, Camp Hill, Ala., to Miss Linda Mae Sullivan, June 28.

Deaths

Theodore C. Lyster ♂ Brigadier General, U. S. Army, retired, Los Angeles; University of Michigan Medical School, Ann Arbor, 1899; veteran of the Spanish-American War; entered the army as an assistant surgeon in 1900; was promoted through the various grades to that of lieutenant colonel in 1917 and in 1919 was retired as a colonel; by an act of Congress in June, 1930, he was promoted to brigadier general, retired; in 1917-1918 was chief of aviation and professional services in the Surgeon General's Office, for which he was awarded the Distinguished Service Medal; for four years he was a director of yellow fever elimination work for the Rockefeller Foundation; at one time, chief of eye, ear, nose and throat, Ancon (Canal Zone) Hospital, and chief of eye service, University of the Philippines, Manila; in 1913, during the American occupation, was chief health officer of Vera Cruz, Mexico; member of the American Laryngological, Rhinological and Otolological Society and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; past president of the Southern California Medical Association; associate clinical professor of ophthalmology, University of Southern California School of Medicine; member of the eye service of the Good Samaritan, Los Angeles County, St. Vincent's and Hollywood hospitals; aged 58; died, August 5, of coronary sclerosis and angina pectoris.

Nellis Barnes Foster ♂ New York; Johns Hopkins University School of Medicine, Baltimore, 1902; secretary of the Section on Practice of Medicine, American Medical Association, 1920-1922, and chairman, 1922-1923; associate professor of medicine and at one time instructor and assistant professor, Cornell University Medical College; instructor and associate in biologic chemistry, Columbia University, 1906-1912; professor of medicine at the University of Michigan, Ann Arbor, and director of the medical clinic, University Hospital, 1917-1918; member of the Association of American Physicians and the American Society of Clinical Investigation; served during the World War; on the staffs of the New York Hospital and the Woman's Hospital, New York, the Englewood (N. J.) Hospital, the Mount Vernon (N. Y.) Hospital and the Barrett Memorial Hospital, Middletown, N. Y.; aged 58; died, August 20, at Camden, Maine, of coronary occlusion.

Harvey Gilmer Mudd ♂ St. Louis; St. Louis Medical College, 1881; professor emeritus of surgery, Washington University School of Medicine; member of the American Surgical Association and the American Association of Genito-Urinary Surgeons; fellow of the American College of Surgeons; member of the medical reserve corps and chairman of the medical section of the State Council of Defense during the World War; for many years on the staffs of St. Luke's Hospital and the Barnard Skin and Cancer Hospital; aged 75; died, August 16, in the Charles Gate Hospital, Boston, following an operation for prostatitis.

Powell C. Fauntleroy ♂ Colonel, U. S. Army, retired, Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1893; entered the army as an assis-

tant surgeon in 1895; veteran of the Spanish-American War; was promoted through the various grades to that of colonel in 1917; retired for disability in line of duty in 1922; fellow of the American College of Surgeons; aged 63; died, July 30, at the Walter Reed General Hospital, of arteriosclerosis, myocarditis and cerebral hemorrhage.

Walter James Taylor, Port Angeles, Wash.; Western University Faculty of Medicine, London, Ont., 1908; member of the Radiological Society of North America and the Washington State Medical Association; past president of the Clallam County Medical Society; at one time state senator; on the staff of the Port Angeles Hospital and Sanitarium; aged 56; died, July 19, of encephalitis.

Lucius Crocker Pardee ♂ Evanston, Ill.; Northwestern University Medical School, Chicago, 1894; formerly instructor and associate professor of dermatology at his alma mater; on the staff of the Evanston (Ill.) Hospital and formerly on the staff of the Wesley Memorial Hospital, Chicago; aged 64; died, August 27, of angina pectoris and pulmonary edema.

Raymond Marvin Graham, Clarksville, Tenn.; St. Louis College of Physicians and Surgeons, 1918; president of the Montgomery County Medical Society; member of the Tennessee State Medical Association; on the staff of the Clarksville Hospital; aged 51; died, July 31, of carcinoma of the right lung with metastasis to the left frontal lobe of the brain.

Alfred Marvin Hall, Chicago; Chicago Medical College, 1889; associate professor (extramural) of ophthalmology, Northwestern University Medical School; on the staff of the Passavant Hospital, and formerly on the staff of the Children's Memorial Hospital; aged 71; died suddenly, August 27, in Nelma, Wis., of coronary thrombosis.

Holder Crary Kirby ♂ New Bedford, Mass.; University of Pennsylvania School of Medicine, Philadelphia, 1900; fellow of the American College of Surgeons and member of the Associated Anesthetists of the United States and Canada; formerly surgeon to the Crary Clinic Hospital; aged 58; died, July 26, of a self inflicted bullet wound.

Henry Augustus Hendrickson, Atlantic Highlands, N. J.; University of the City of New York Medical Department, 1889; formerly mayor, and president of the board of health of Atlantic Highlands; aged 66; died, July 27, in the Monmouth Memorial Hospital, Long Branch, of cerebral hemorrhage, following an operation.

William Emery Harrington ♂ Depew, Okla.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; served during the World War; aged 58; died, August 18, at the University Hospital, Oklahoma City, of heart disease.

Norman W. Hole, Alliance, Ohio; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1898; member of the Ohio State Medical Association; on the staff of the Alliance City Hospital; aged 64; died, August 1, of heart disease.

William Lawrence Shannon, Cincinnati; Medical Department of the University of Cincinnati, 1913; member of the Ohio State Medical Association; served during the World War; aged 46; died, July 29, of hypertension, nephritis and uremia.

Harry Waldemar Boice, Kings Park, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1908; aged 51; on the staff of the Kings Park State Hospital, where he died, August 9, of hypertrophic cirrhosis of the liver.

Waitman T. Willey ♂ Baltimore; Atlantic Medical College, Baltimore, 1898; Baltimore Medical College, 1907; aged 57; on the staff of the Church Home and Infirmary, where he died, July 29, of carcinoma of the stomach.

Herbert Emmons Stockwell, Pittsfield, Mass.; University of Vermont College of Medicine, Burlington, 1897; member of the Massachusetts Medical Society; aged 63; died, July 30, of Parkinson's disease and coronary occlusion.

Benjamin G. Gregg, Florence, S. C.; University of the City of New York Medical Department, 1892; member of the South Carolina Medical Association; aged 72; died suddenly, August 7, of heart disease.

Van Harlingen Coles, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1899; member of the Tennessee State Medical Association; aged 61; died, August 12, of coronary thrombosis.

Clinton Colfax Cady ♂ Alden, Iowa; Drake University Medical Department, Des Moines, 1900; served during the World War; formerly mayor of Alden; aged 63; died, July 27, of cerebral hemorrhage.

Thomas William Connolly ☉ San Francisco; Cooper Medical College, San Francisco, 1902; veteran of the Spanish-American War; aged 58; died, August 6, in St. Joseph's Hospital, of heart disease.

Allen Sherman Martineau ☉ Los Angeles; University of Pennsylvania School of Medicine, Philadelphia, 1925; served during the World War; aged 36; died, July 29, of a self inflicted bullet wound.

Raymond J. Harris ☉ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1894; on the staff of the Broad Street Hospital; aged 61; died suddenly, August 9, of cardiorrenal disease.

Frank Kilburn, Presque Isle, Maine; Jefferson Medical College of Philadelphia, 1879; member of the Maine Medical Association; aged 79; died, July 11, of uremia, arteriosclerosis and nephritis.

Joseph Spencer Hill, Mountpleasant, Tenn.; Missouri Medical College, St. Louis, 1877; for many years member of the board of education; aged 79; died, August 3, of cerebral hemorrhage.

William F. Dickson ☉ Chicago; Faculty of Medicine of Trinity College, Toronto, Ont., Canada, 1882; on the staff of the Woodlawn Hospital; aged 77; died, August 26, of heart disease.

Edward L. Shepard ☉ Brandon, Wis.; Chicago Homeopathic Medical College, 1890; on the staff of St. Agnes' Hospital, Fond du Lac; aged 72; died, August 7, of heart disease.

Joseph Luther Remsburg, Lamolille, Ill.; State University of Iowa College of Medicine, Iowa City, 1878; aged 85; died, July 29, in the Harris Hospital, Mendota.

Horace Darling Seymour, Warren, R. I.; Tufts College Medical School, Boston, 1904; health officer of Warren; aged 50; died suddenly, August 6, of heart disease.

Thomas M. Gairdner, Waco, Neb.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1886; aged 70; died, July 27, in a hospital at Philadelphia.

Dallas W. Chesnutt, Wilmington, N. C.; Leonard Medical School, Raleigh, 1903; aged 55; died, August 2, of malignant tumor of the right side of the neck.

C. Hardin Hurst, Oakesdale, Wash.; Kentucky School of Medicine, Louisville, 1907; aged 48; died, July 30, of injuries received in an automobile accident.

Gustav A. Bonschur, Woodhaven, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1885; aged 76; died, July 22, of chronic nephritis.

Frank W. Greiner, Seattle; Chicago Homeopathic Medical College, 1896; aged 70; died, July 26, of coronary thrombosis, hypertension and arteriosclerosis.

Jarrot Laban Rollins, Colfax, Calif.; University of Missouri School of Medicine, Columbia, 1883; aged 74; died, August 12, of coronary disease.

Austin G. Case, Denver; Long Island College Hospital, Brooklyn, 1873; aged 86; died, July 27, of myocarditis and adenoma of the prostate.

James Francis Cropp, Walla Walla, Wash.; Jefferson Medical College of Philadelphia, 1878; aged 79; died, May 9, of cerebral hemorrhage.

William James Galbraith, Inglewood, Calif.; Cincinnati College of Medicine and Surgery, 1880; aged 73; died, in July, of cerebral hemorrhage.

George Franklin Woodill, Lynn, Mass.; College of Physicians and Surgeons, Boston, 1890; aged 65; died, August 1, of Hodgkin's disease.

Edward W. O'Connor, Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; aged 65; died, July 26, of vasomotor paralysis.

George Woodworth Lougee ☉ Lynn, Mass.; Medical School of Maine, Portland, 1883; aged 74; died, August 4, of angina pectoris.

Thomas Hugh Barber, Colorado, Texas; Barnes Medical College, St. Louis, 1898; aged 69; died, May 26, of uremia and arteriosclerosis.

M. Raymond Rice, Omaha; John A. Creighton Medical College, Omaha, 1909; aged 45; died, July 15, of carcinoma of the tongue.

Frank Bright, Hendersonville, N. C.; Chattanooga (Tenn.) Medical College, 1892; aged 67; died, August 7, of angina pectoris.

Charles Wesley Burgess ☉ Bethany, Mo. (licensed, Missouri, 1884); aged 89; died, August 1, of cerebral thrombosis.

Bureau of Investigation

MODERN RESEARCH SOCIETY
The Questionnaire Nuisance Again

Physicians have recently been receiving on the stationery of the Modern Research Society, 135 East 42d Street, New York City, a form letter signed "F. Stanley Newbery, Jr., Supervisor." The letter asked that the physician do the Modern Research Society "a small favor." It went on to state that recent investigations which this "Society" had made of "shaving methods" had disclosed that there were a surprising number of men who were "suffering from irritations and infections in or near the bearded area of the face and neck." It therefore had occurred to the "Society" that these irritations might be caused in part, at least, by "faulty shaving methods." Having arrived at this well-thought-out conclusion, the Society would "like to have something approximating a consensus of professional opinion as to how much "cause-and-effect relationship" there was between faulty shaving methods and the irritations previously referred to. And more to the same effect. On the reverse side of this letter there were such questions as the following, which were to be answered by the physician "Yes" or "No":

- "Does the scraping action of faulty shaving tend to irritate the skin?"
- "Is there a greater tendency with wrong shaving methods to abrade the skin and so leave openings for the possible entrance of infection?"
- "Does continued shaving with wrong methods, and the resultant irritation, tend to lessen the self-protective action of the normal skin and thus cause skin trouble?"

Such questions—that obviously could have been answered by the butcher, the baker or the candlestick-maker just as easily as by a man with medical training—were submitted to physicians, who were asked to take their time in answering this twaddle. But the last question propounded was the *pièce de résistance* of the questionnaire. It read:

"Have you seen any cases of any of the following which, in your opinion, might well have been caused or aggravated by the abrasive, irritant action of faulty shaving:

Folliculitis	Cancer of skin
Eczema	Herpes zoster
Dermatitis seborrhoica	Ingrowing hairs
Tinea barbae	Acne vulgaris
Impetigo contagiosa	Boils
Sycosis vulgaris	Carbuncles
Tuberculosis of skin	Injured blood vessels
Anthrax	Keratosis senilis
Erysipelas	Warts

It should be patent, even to the non-medically trained, that any of the conditions listed would, at least, be "aggravated" by the "abrasive, irritant action of faulty shaving."

One physician—Dr. Livingstone L. Lewis of Hoboken, N. J.—who sent in this material enclosed with the questionnaire an advertisement from the New York *World-Telegram* of July 24, 1933. As Dr. Lewis laconically put it:

"They're at it again. It would seem that there might be some connection between this letter and the advertisement which I have enclosed."

The advertisement in question was one dealing with Gillette Blue Blades and was headed in large black type: "Can Faulty Shaving Cause Serious Skin Trouble?" The advertisement then went on to answer the question that it propounded in a most emphatic affirmative, claiming that "this is the statement of the Gillette Skin Clinic as issued by its head, an eminent dermatologist." The balance of the advertisement went on to descant on the virtues of the Blue Blade of Gillette.

The earliest record in the files of the Bureau of Investigation of any "Modern Research Society" is that of an advertisement appearing in a cheap health-fad magazine known as *Health and Life* which had for its editor an individual who called himself Bernard Bernard, but whose real name, according to the federal authorities, was Trappschuh. Incidentally, later Trappschuh and another person got into the toils of the federal law when they exploited a fraudulent device for the alleged purpose of increasing the height of those who desired to be tall. This was described in detail in this department of THE JOURNAL under the title "The Glover Height-Increasing Fraud" July 6, 1929.

The Modern Research Society advertisement in *Health and Life* gave its address at that time as 43 West 16th Street, New

York City. The advertisement dealt with a mail-order course in psychoanalysis! The next record of a Modern Research Society was a full-page advertisement in *Physical Culture* for April, 1923. It was then operating from the same address and was selling a line of booklets entitled "The Secret of Sound Sleep." Later the Modern Research Society matter bobbed up when the Bureau of Investigation looked into the piece of quackery sold under the name of "El Zair," which also operated from 43 West 16th Street, New York City. There were a number of concerns of dubious standing occupying the same quarters as El Zair—the "Thompson-Barlow Company," the "Thompson Feature Service," the "Modern Research Society," the "Corrective Eating Society," and others. The article on El Zair was published in this department of *THE JOURNAL*, Sept. 1, 1923.

The concern was next heard of in a letter received from the National Vigilance Committee of the Associated Advertising Clubs of the World in August, 1925, asking for information on the "Airflex Arch Corrector Treatment," which was alleged to be put out by a Modern Research Society of 131 West 30th Street, New York City. The Airflex device, if the advertising is to be believed, was a God-send to those suffering from flat feet.

In January, 1928, the Modern Research Society, still at 131 West 30th Street, New York City, was sending out a questionnaire to laymen, asking for information regarding toilet soaps.

In 1930 the Modern Research Society had again moved and was sending out letters from 127 West 30th Street, this time to physicians. The questionnaire dealt with the efficacy of sodium bicarbonate as an antacid. The physician was asked whether he prescribed it, whether he considered it harmful, whether he had observed any evidence of the claim said to be made by certain clinicians that sodium bicarbonate may cause edema, alkalosis, malnutrition, kidney and bladder trouble, etc., and, finally, the physician was asked that if he didn't prescribe sodium bicarbonate, just "what indigestion remedies" he did prescribe.

About six months later, in December, 1930, another questionnaire on the stationery of the Modern Research Society went out to physicians. This time they were anxious to get the physicians to help them to determine the value of saline laxatives as obesity cures. At that time the National Better Business Bureau was appealed to and asked to find out just who was behind the Modern Research Society of 127 West 30th Street, New York City. The National Better Business Bureau dictated a letter of inquiry to the concern, but they got no answer, although obviously the letter was delivered. They then had an investigator call at this address, who reported that he found no such concern as the Modern Research Society listed on the directory board of the building and when he went to the office of the building he was told that the Modern Research Society had no offices in the building and had been out of business for over a year. This, it is to be remembered, was at the very time the Modern Research Society was sending out questionnaires to physicians, using that address, and also at the very time that letters which were sent to that address were being delivered to somebody.

Now, in August, 1933, comes the razor-blade questionnaire from the Modern Research Society at 135 East 42d Street. From investigation it appears that the Modern Research Society is located in the same offices with an advertising agency, Ruthrauff and Ryan, Inc.; that F. Stanley Newbery, Jr., is said to be listed in the agency list of the *Standard Advertising Register* for August, 1933, as the "Director of Research" for Ruthrauff and Ryan, and that Ruthrauff and Ryan are said to act as advertising agents for the Gillette Safety Razor Company.

However, let us not throw all of the blame for this questionnaire nuisance on advertising agents who have found in the medical profession a very tolerant and easy-going group. It is quite obvious that advertising agents would not create phoney "societies" nor spend money on printing, stationery and postage in attempting to get professional advice for nothing or to get physicians to answer inane questions, also for nothing, unless there were a pretty large number of medical men who, instead of throwing these effusions in the waste-basket where they belong, took the trouble to answer them.

Correspondence

"FAULTY BLOOD GROUPING DUE TO AUTO-AGGLUTININS"

To the Editor:—In *THE JOURNAL*, July 15, is an article by Manheims and Brunner on faulty blood grouping due to auto-agglutinins. One precaution to avoid such false interpretations is suggested in the form of cross-matching before the transfusion. However, faulty blood grouping, even when detected in time to avert a serious transfusion reaction, is a cause of delay, expense and embarrassment; occasionally the patient may suffer by the delay. At the Brooklyn Jewish Hospital, where all transfusions are performed by the Department of Pathology under the continual personal supervision of Dr. Silik Polayes, it is the rule that when an AB blood is found it is immediately tested for auto-agglutination by the mixing of one drop each of the patient's cell suspension and patient's serum at room temperature. If agglutination is present, regrouping is performed with washed cells. Careful attention to such and similar details will bring to a minimum the occurrence of transfusion accidents.

EMIL ROTHSTEIN, M.D., New York.

HEIGHT-WEIGHT-AGE TABLES FOR CHILDREN

To the Editor:—The editorial on "Height-Weight-Age Tables for Children" (*THE JOURNAL*, July 29) will do much to mark the end of an epoch of error. The reliance on weight as an indication of malnutrition has in the last decade and a half been the cause of a great deal of waste of energy and funds in public health propaganda. That it has now been deserted by its proponents is welcome news.

One might venture to reenforce the lessons with which you conclude your able review.

There is no one correct average weight for any age or height and one might venture to predict that there never will be. There is no one index of malnutrition, because malnutrition, whatever it may be, certainly is not a single physiologic or clinical entity.

There are at least three major elements in weight. One is anthropological. The deep-breasted, broad-shouldered, brachycephalic Alpine type child should be rated by a standard different from that appropriate to the long-waisted, "linear" dolichocephalic riparian type child. Weight depends on "build." For this fact we are indebted to Boas, Kretschmer, Stockard, Smith and others.

The second is developmental. Weight status varies with the stage of development from birth to adolescence. The child passes through alternate periods of roundness and leanness. This was pointed out by Stratz. These alternations are normal. They follow periods of development rather than periods of years. These are physiologic ages studied through by Boas and myself and more recently by Todd and Furley. Carrell has followed in his recent discussion on Physiological Time. Furley has brought out a useful term, Developmental Age, and coined a new developmental index. Weight depends in part therefore on the developmental stage. This is what the weight chart makers do not consider.

The third major element in weight is physiologic or pathologic. But weight variations are not pathognomonic, nor is it true that subnormality invariably shows in underweight and that supernormality is indicated by overweight or by average weight. This is clinically wrong, a half-truth which will entrap only the unwary.

The overweight Froelich syndrome child, like the condensed milk-fed baby, has frequently won health prizes in the past,

and the height-weight-age chart has supported the choice, while the lean, hard-playing, hard-fisted neighborhood pest was underweight.

Although most of this was explained to the proponents of the original height-weight-age charts fifteen years ago, the simplicity and popular appeal of the weight chart swept aside the real considerations of scientific fact, and scientific facts, like the "Gods of the Copy Books Maxims" in Kipling's poem "limp up to explain it once more."

We have now led the public up the hill and down again but we may have learned something by the trip. The next fifteen years may give us an opportunity to prove it.

C. WARD CRAMPTON, M.D., New York.

HOW A SEED SUPPLEMENTED CHEMICAL ANALYSIS

To the Editor:—It was observed that certain students in a high school in one of the larger cities frequently acted in an abnormal manner. They were erratic in their behavior. Periods of extreme activity were followed by lassitude and drowsiness. The pupils of the eyes were dilated. Their conversation was irrational and frequently boastful. The police investigated and found no evidence of alcoholism. The matter was turned over to the narcotic squad. Three of the students ultimately confessed that they often smoked cigarets for each of which they paid 20 cents. A mild third degree elicited the names of the venders.

Two men, one colored, were subsequently arrested. A number of cigarets and a quantity of a coarse greenish vegetable substance were found in their possession. Both the cigarets and the coarse powder were sent to these laboratories for examination.

The powder consisted of coarsely broken greenish vegetable matter composed in the main of more or less agglutinated fragments of leaves, small stems, pistillate flowers, and numerous resin masses. Soaked in water, the leaflets were evidently linear lanceolate with serrated edges and were slightly hairy.

The alcoholic extract was a bright yellowish green with a peculiar druglike odor and flavor. It also contained a volatile alkaloid.

The sample contained about 15 per cent of ash, which carried both calcium and potassium salts. When slightly burned or scorched, the material gave off a characteristic druglike odor. The fumes caused an odd light-headed sensation followed by a slight headache and dilated pupils.

A normal, healthy white rat weighing 102 Gm. was fed 150 mg. of the powder. The animal became excited and nervous twitchings were noted, with a lack of coordination. It finally became sluggish and eventually recovered.

The cigarets also contained a coarse powder practically identical with the loose material, mixed with a diluent resembling alfalfa leaves.

The product was identified as *Cannabis indica*. It appeared to be practically the same as Standard laboratory samples of hemp or hashish.

Three developed, or partly developed, seeds or fruits were found in the cigarets. These seeds were planted. One of them in a little over two months grew into a tall hemp plant about 35 inches high.

Mother nature herself, on occasion, gives the chemist valuable and sometimes striking assistance.

Both venders of the cigarets entered a plea of not guilty but were found guilty by the court and subsequently confessed.

LEWIS B. ALLYN, Westfield, Mass.

Director, Westfield Testing and
Research Laboratories.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DEATHS FROM SCORPION STING

To the Editor:—How fatal is the sting of a scorpion, and does the poisonous type occur in the southwestern part of the United States? Please omit name.

M.D., Oklahoma City.

ANSWER.—Scorpions occur practically all over the world and are especially common in the tropics. Many deaths, especially in children, have occurred following the sting of scorpions. The percentage of mortality diminishes rapidly as the age increases. It is rare to see a fatal case in persons over 12 years of age; however, fatal cases, in adults are reported. Dr. Mohammed Shaheen is said to have stated that 60 per cent of children under the age of 5 years stung by scorpions die. The public health department of Egypt reported 444 deaths from scorpion stings recorded in some of the larger towns from 1901 to 1907. Deaths have been reported also from South Africa, the West Indies, Mexico, Korea and Manchuria, and within the last two years there have been reported to the state board of health of Arizona six deaths from scorpion stings, nearly all of which occurred in children. The state board of health of Arizona says there seem to be two species in that state, which are locally termed the desert scorpion and the rock or mountain scorpion. The scorpion *Centruroides vittatus* Say is fairly common in northwestern Arkansas, where it hides under stones and similar shelters on dry hillsides. There are many species in South America, the most widespread species in south central and southeastern Brazil being *Tityus bahiensis*, which inhabits both prairies and hills and hides in holes in the ground or in trees. Another species in Brazil is *Tityus serrulatus*.

The public health department of Egypt as early as 1909 prepared an antivenin, which was the first effective anti-scorpionic serum prepared. Heitor Maurano found that the Egyptian scorpionic antivenin was not effective against the venom of the Brazilian scorpion *Tityus bahiensis*; two years later, Vital Brazil succeeded in immunizing horses and thus obtained a serum that would neutralize Brazilian scorpionic venom. There has been maintained at Butantan for years a fresh stock of scorpion antivenin and no death from scorpion sting has been reported during that time. The toxicity of the venom of scorpions in South America was discussed in *THE JOURNAL OF Hygiene* (9:69, 1909) discussed the preparation of an antiserum for the prophylaxis and treatment of scorpion poisoning in upper Egypt.

DERMATITIS HERPETIFORMIS

To the Editor:—Please give cause and treatment of dermatitis herpetiformis. Kindly omit name and address.

M.D., Pennsylvania.

ANSWER.—The cause of dermatitis herpetiformis is unknown. There are several theories:

1. Dühring, who first showed the distinction between dermatitis herpetiformis and pemphigus, considered nervous shock or long continued nerve tension an important point in etiology, and there are many instances in which the disease has appeared after such an experience.

2. The occasional association of the disease with scleroderma and more frequently with pregnancy gives reason to suspect an endocrine origin; but the basal metabolism is, in most cases, within normal limits, and the evidence of such an etiology is not convincing.

3. There is a disturbance of metabolism in Dühring's disease. Blood sugar is sometimes low, blood chlorides and uric acid high, these conditions varying during the phases of the disorder. The chlorides and the albumin content of the skin have been found above normal, with a tendency to edema. It has been suggested that the high chloride content may be a measure of protection against the iodine sensitiveness so marked in some cases.

4. Colitis and disease of the kidneys often complicate dermatitis herpetiformis. Indicanuria is often present.

5. The infectious theory has considerable support. Wounds, abscesses, pneumonia and vaccination are often followed by Dühring's disease. Focal infection, with frequent showers of bacteria, is held by some as the cause. Leredde, one of the early investigators of the disease, thought that the eosinophilia so often found in the disease indicated the presence of intestinal parasites; but later research has not supported this view.

6. Hypersensitiveness is urged as the underlying cause. There is in many cases a marked sensitization to iodine, so that a 50 per cent ointment was suggested as a skin test for dermatitis herpetiformis. The iodine sensitiveness is not always present, however. The internal administration of the drug is more efficient in showing it. Bromides, also, sometimes cause an exacerbation, though they may be used with benefit in other cases. Skin reactions to bacterial vaccines have also been reported.

Critical judgment of the effect of treatment is necessary to evaluate any method in a disease which so rapidly fluctuates as does this one. Hygienic measures to maintain good resistance and nervous stability are most important. Avoidance of excitement, overwork and irregular hours should be insisted on. Regular hours, plenty of sleep, some outdoor exercise, a high vitamin diet with little coffee and tea, and no alcohol are important. Tobacco also should be reduced to the minimum. During an attack, rest in bed is advisable.

Tonics may be necessary. Cannabis may be used at times to reduce nervousness. Bromides are sometimes useful; but some patients are sensitive to bromides as well as to iodides. Reactions to these drugs are preventable by administration of sodium chloride.

Arsenic, either the inorganic or organic preparations, clears up the lesions and stops the itching for a time in most of the cases. Care in prescribing is of the utmost importance, for many patients who find it helpful continue to use it for years and later suffer from pigmentations, keratoses or even epithelioma in very malignant form. "Do not repeat," should be written on every prescription. Thyroid extract, even in cases presenting normal basal metabolism, is sometimes helpful, as are calcium with parathyroid extract or salicin in 1 Gm. doses three times a day. Injections of from 3 to 15 cc. of the patient's blood intramuscularly every fifth day for from five to ten doses gives relief in a fair proportion of cases. Simple bleeding has also given relief.

Focal infection should be sought and cleared up if possible. Vaccines are often of use. Obtaining cultures of the intestinal flora, testing the skin for sensitization with each organism, and making a mixed vaccine of all those causing a reaction provides a means of relief in many cases.

General exposures to ultraviolet rays have a tonic effect, and local erythema doses help to clear up the lesions and stop the itching.

Sulphur locally has long been used with good results to give temporary alleviation. One per cent solution of acriflavine hydrochloride in water can be painted on the lesions daily with benefit. The patient should be told at the outset that persistence is the only method of cure.

SECONDARY SYPHILIS WITH POSSIBLE SENSITIVITY TO ANTISYPHILITIC DRUGS

To the Editor:—Dec. 24, 1932, I began treating a case of early secondary syphilis in a man, aged 52. His rash was definite but the mucous membranes were apparently not noticeably involved. The heart and kidneys were in good condition, the man having never been seriously ill during his life. From the date mentioned until Feb. 21, 1933, he received ten doses of neoarsphenamine, from 0.15 to 0.75 Gm.; the interval between doses was three days for the first three and then approximately seven days thereafter; his weight at the beginning was 184 pounds (83.5 Kg.). After the fifth dose, 0.75 Gm., he had an attack of urticaria lasting a few days, but there was no recurrence of the urticaria thereafter. During the seventh dose, 0.75 Gm., his conjunctivae flushed and he coughed a little and was nauseated; but these symptoms passed away in a few moments after he smelled aromatic spirit of ammonia. At the conclusion of this series of neoarsphenamine his general condition was excellent. He had no complaints, the viscera showed no evidence of damage on ordinary methods of examination, and his weight had increased to 193 pounds (87.5 Kg.). He stated that once or twice recently he had felt that he was catching a cold by a sensation of stuffiness in the nose but that in a short time the sensation disappeared. I was not able to tell accurately from the story whether or not it followed soon after the neoarsphenamine injections. A week after the last injection I started him on sodium bismuth thioglycolate, 0.2 Gm. After the third dose he complained of a cold in the head associated with such severe swelling of the nasal mucous membranes as to make breathing possible through the mouth only. This developed between March 8 and 11. Another dose was given, March 11, and when he presented himself for another dose, March 16, he complained of an increase of the nasal swelling and a pharyngitis. Also there was a generalized muscle soreness, with aches and pains in the larger joints. There was no fever and no headache or purulent nasal discharge. By March 25 the general soreness and pain in the joints was severe; the man could get no rest but refused opiates because they produced nausea. The nasal mucous membrane was edematous and apparently unaffected by ephedrine. The knees and elbows were involved mostly. Pain in these joints was associated with movement; there was a thickening of the tissues over and around the olecranon processes and periosteal tenderness in the same regions; the knees showed no swelling; there were occasional shooting pains in the back of the thighs, radiating to the knees and sometimes below. The patient was put in bed; morphine

was given hypodermically, and acetylsalicylic acid by mouth, for pain. There was no fever. Swelling of nasal membranes was unaffected by ephedrine or mild silver protein. By March 25 the right knee was swollen, apparently from both an increase in joint fluid and periarticular edema; but no redness or increase in local temperature was noted. The radiating pains in the back of the legs continued and sometimes went below the knee. There were some tender spots on the tibias just above the ankles, but no redness developed. The nasal condition was as before. April 1, 0.1 Gm. of sodium bismuth thioglycolate was given and in about four hours the pains in the joints and along the sciatic nerve trunks were increased and a dose of morphine was necessary. In about thirty-six hours the patient was much improved as to the joint and other pains but the nasal condition was not improved. April 10, another 0.1 Gm. dose of the drug was given, with similar after-effect. Saturated solution of potassium iodide was given, but when a rash developed after the dosage of 20 minims (1.25 cc.) three times a day had been reached, it was stopped. The patient refuses consultation with a nose and throat specialist because he fears that an operation will be suggested. No roentgenograms of the sinuses have been made. No Wassermann test has been made since the original, in the latter part of December, 1932, which was positive. The heart and kidneys show no signs of involvement. Please discuss the etiologic factors involved in this jig-saw. What must I do now in regard to treatment of syphilis and neuro-articular disease? Is the man sensitive to metals or is the condition one of focal infection grafted on the syphilis? Today I gave him 0.5 Gm. of sodium thiosulphate. Is more indicated? If he is sensitive to metals, how can the syphilis be treated? What can be done about the nasal condition? If published, please omit name, address, and state.

M.D.

ANSWER.—The history as given is so complicated that no definite diagnosis can be reached. So far as sensitiveness to the arsphenamine drugs is concerned, during the ten injections of neoarsphenamine the patient had two reactions (after the fifth and seventh doses) of the angioneurotic type, first urticaria and next a mild nitritoid crisis. These reactions are not indicative of sensitization to neoarsphenamine and provide no contraindication to the further use of this drug.

Bismuth compounds may, in rare instances, cause a reaction popularly known as bismuth grip, characterized by general malaise and generalized aching, particularly located in the joints. It is, however, rarely as severe as in this patient and is not associated with periarticular swelling or the exudation of fluid into the joints.

Either neoarsphenamine or bismuth compounds may cause peripheral neuritis, although the correspondent fails to provide information as to muscle strength or sensory changes that usually accompany this condition. The suggestion seems unlikely because of the conditions found in the joints.

Neither neoarsphenamine nor bismuth compounds produce reactions characterized by intense swelling of the nasal mucosa. This fact, together with the factors already mentioned, suggest that the patient's nasal and joint symptoms are not due to sensitivity to any of the drugs employed.

There are infrequent examples of so-called drug resistant syphilis in which syphilitic lesions fail to heal or recur while the patient is actually under treatment. In such patients the usual story is that healing occurs during arsphenamine and lesions recur during the interim course of heavy metal. This possibility must be considered in the present instance. Roentgenograms of the tibias should be taken to determine whether the tender spots are caused by local areas of syphilitic periostitis; and the patient's objection to a laryngologic examination should, if possible, be overcome. Failing these examinations, some idea as to whether the possibility of drug resistant syphilis is correct may be gained by a therapeutic test with an arsphenamine. This should be carried out, preferably with a different one of the arsphenamine group than that originally used, since, if the patient is actually drug resistant, the phenomenon of resistance is often drug specific. It is suggested that the patient be given 0.2 Gm. of arsphenamine, to be followed in five days with a dose of 0.4 Gm. if no reaction occurs. Prompt subsidence of symptoms would strengthen the suggestion of drug resistant syphilis.

This condition is, however, so relatively rare that it seems much more likely that the patient has an intercurrent disease, probably an acute infectious arthritis associated with a focal infection in the nasopharynx.

The information provided does not permit a definite answer to the question as to whether the patient is sensitive to metals. This can be determined only by a further trial of antisiphilitic treatment. It is suggested that this be carried out, beginning now with a course of arsphenamine and, if this is tolerated without reaction suggesting arsphenamine sensitivity, to follow this with a course of an insoluble bismuth salt, preferably bismuth salicylate. There is no indication for giving the patient any more sodium thiosulphate, which, in the opinion of some, is of no value whatever in heavy metal poisoning.

An answer as to how the syphilis can be treated if the patient is sensitive to metals cannot be provided without further information from the correspondent.

To offer suggestions as to the treatment of the nasal condition is valueless without more information as to its etiology, which should be determined, if possible, by thorough laryngologic examination.

SYPHILIS OF THE NERVOUS SYSTEM

To the Editor:—A man, aged 35, had a chancre fifteen years ago. This was treated intensively, so that no positive Wassermann reaction ever appeared. The spinal fluid was always Wassermann negative, the last test being made about two years ago. Recently courses of trypan-blue and a bismuth compound were instituted, six of each, this being the only treatment within the last five years. The patient has had for about a year a sense of fullness in the ears as if water were present. The ears have been catheterized without result. Occasionally there is a sharp pain in the mastoid region on both sides. This is not so marked early in the morning. Besides, he is always tired even in the morning, but at about 5 p. m. he feels better. This is a troublesome feature in his work and worries him. Dizziness is present. No Romberg sign is present but he feels as if he will fall over if he closes his eyes. Neurologic examination shows a fixed right pupil and the knee jerks slightly sluggish but is otherwise negative. Abdominal symptoms are present. An emptiness appears in the epigastric area about two hours after eating. Occasionally there is nausea with belching. The bowels are normal. Three years ago he was diagnosed as having a nervous colitis. Could you suggest any diagnosis for these nervous symptoms? Is there any possibility of syphilis being a cause for the head condition? Please omit name.

M.D., Illinois.

ANSWER.—There certainly is a possibility that syphilis may be the cause of the nervous symptoms in this case. Negative laboratory tests never exclude syphilis of the nervous system. The clinical evidence would be almost conclusive if it could be shown that there is no other explanation for the fixed right pupil and particularly if only the light reaction was lost before the pupil became fixed. It is, of course, a fact that while the Argyll Robertson pupil is nearly always due to syphilis, many other disease conditions may produce a fixed pupil.

CATHARTIC COLITIS

To the Editor:—A woman, aged 62, complains that she has had intermittent pain in the upper left quadrant of the abdomen for the past three years. Constipation, which can be relieved only by large doses of a cathartic, has been continuous. She is 5 feet 5 inches (165 cm.) tall and weighs 185 pounds (84 Kg.). She is extremely nervous. The right lobe of the thyroid is palpable and hard but not nodular; the left lobe is enlarged, firm and regular. The heart and chest are normal. There is no visceral enlargement nor tumor masses, pain and tenderness on palpation over the upper left quadrant. The Wassermann reaction is negative. A basal metabolism test was refused. Roentgen examination of the gastro-intestinal tract is negative. The stomach emptied in the prescribed time. The contour of the colon is regular; the meal was in the colon in twenty-four hours and was regularly distributed. Roentgen examination of the thorax is negative and there is no roentgen evidence of arthritis. The patient was placed on compound solution of iodine, 10 minims (0.6 cc.) three times a day; phenobarbital, three-fourths grain (0.05 Gm.) three times a day; magnesia magma, 1 fluidounce (30 cc.) three times daily, and a reducing diet. The compound solution of iodine over a period of six weeks has been reduced to 3 minims (0.2 cc.) daily and phenobarbital, three-fourths grain, at bedtime. The weight has been reduced to 153 pounds (69 Kg.), both lobes of the thyroid have been considerably reduced and the nervousness has abated. However, the pain and constipation still persist. Can you offer any suggestions as to diagnosis and treatment? Please omit name.

M.D., Wisconsin.

ANSWER.—The history fits well with the condition resulting commonly from ineffectual or poor attempts at relieving constipation by the repeated use of cathartics. The rôle of the thyroid is questionable. Ordinarily hyperthyroidism is associated with frequent bowel movements rather than constipation, although the opposite is occasionally seen. If the physical appearances and the results of the roentgen and stool examinations are all negative, the diagnosis of cathartic colitis becomes all the more justified. The attempts of treatment with 30 cc. of magnesia magma three times daily will no more cure the patient than the methods used by the patient herself before medical aid was sought. In a woman of 62 it is sometimes difficult to promise that relief will be obtained without the use of some form of cathartic. The following routine may be instituted: All cathartics should be withdrawn. The diet for several days, at least until the pain is gone, should be bland; i. e., devoid of any roughage, either raw or boiled. If possible, rest in bed for a short time daily is advisable, during which time hot applications are applied over the whole of the abdomen. Some form of belladonna, as atropine sulphate, 0.3 mg. ($\frac{1}{200}$ grain), may be given twice daily, or as the extract in 0.013 Gm. ($\frac{1}{8}$ grain) doses alone or preferably in conjunction with calcium gluconate, from 1.6 to 2 Gm. (25 to 30 grains), three times daily. If no bowel movement occurs, a retention olive or cottonseed oil enema should be administered every other day, to be followed if necessary with an enema of one glass of warm water in the morning. As the subjective symptoms disappear, stewed vegetables should be gradually added to the diet, then

stewed fruit and finally the uncooked ones. It is sometimes necessary to resort to some form of mild cathartics to promote evacuations daily or every other day. Liquid petrolatum may be taken in doses of a tablespoonful once or twice daily. It may be given in the form of a thick emulsion as it may be obtained in the market but should not be prescribed with phenolphthalein because the latter will provoke the pain which the physician is seeking to eliminate. This is the type of case for which colonic irrigations are prescribed by some, but the procedure is unjustifiable here.

NO INSULIN INACTIVATION

To the Editor:—I should like to obtain a supply of inactivated insulin. Is it possible to obtain such a product? Is there a simple method by which insulin may be inactivated with a minimum disturbance of the insulin molecule?

SAMUEL DESSEN, M.D., Chicago.

ANSWER.—While the literature contains many references on inactivation of insulin by various enzymes, cysteine, glutathione, and so on, THE JOURNAL has no information as to the usefulness of such products and no record of such a preparation on the market. Since the structure of the insulin molecule remains to be fully elucidated, the changes affected in it by "inactivation" are not easily detectable, short of radical changes in the chemical nature of the substance. Consequently no "simple method of inactivation with a minimum disturbance of the insulin molecule" can be recommended.

STAPHYLOCOCCI AND ERYSIPELAS

To the Editor:—Recently I had a case of facial erysipelas that terminated fatally on the fifth day. The white blood average cell count was 40,000. Blood culture showed a hemolytic staphylococcus. Please give me some idea as to the virulence of the organism. The patient died with every evidence of a severe septicemia. Please omit name.

M.D., Illinois.

ANSWER.—Certain strains of the hemolytic variety of *Staphylococcus aureus*, isolated from human sources of fatal septicemia, secrete in young broth cultures powerful dermatotoxins and hemotoxins. Adult rabbits injected subcutaneously with from 0.1 to 0.2 cc. of the dermatotoxin suffer intense local necrosis, with subsequent sloughing of the overlying skin. The intravenous injection of from 0.2 to 0.4 cc. of the hemotoxin causes total necrosis of the renal cortex, which, histopathologically, resembles the picture occasionally observed in eclamptic cortical necrosis. Both the subcutaneous and the intravenous injection of these toxins produce general symptoms of extreme intoxication, and death usually results in from two to four days. Professor Forssman has recently called attention to this excessive toxic action of certain virulent strains of *Staphylococcus aureus* (*Acta path. et microbiol. Scandinavica*, supp. 11, p. 202, 1932).

It is most improbable that true erysipelas is caused by the staphylococcus. Rare cases of erysipelas have been reported from which the staphylococcus was the sole micro-organism isolated. Birkhaug has discussed these cases at length (*The Etiology of Erysipelas, Arch. Path.* 6:441 [Sept.] 1928). Modern clinical bacteriologists are inclined to view such isolated organisms as contaminants. In this connection one must consider the ubiquitous presence of the staphylococcus and its ready transfer to the erysipelatos area. After careful disinfection of the area from which cultures are to be taken and with the use of Birkhaug's intracutaneous aspiration technic at the edge of the inflamed area, the lesion will invariably yield a pure culture of the hemolytic streptococcus, the true cause of erysipelas. When staphylococcal septicemia arises in connection with erysipelas, as in the case reported, the former must be considered a secondary infection. The path followed by the staphylococcus is either the lymphatics or the blood vessels within the erysipelatos abraded area. *Staphylococcus septicemia* superimposed on erysipelas offers a grave prognosis.

RADIUM TREATMENT OF UTERINE FIBROIDS

To the Editor:—What is the present status of radium treatment in uterine fibroids? How extensively and successfully is it practiced; and for what type of cases? An evaluation of the treatment would be appreciated. Please omit name.

M.D., California.

ANSWER.—Radium is definitely valuable in the control of uterine fibroids. Its usefulness is directly proportional to the care exhibited in the selection of the patients in whom it is to be used. At present there is general agreement that radium treatment is suitable for any woman over 40 who has a symmetrically placed fibroid not larger than the size of a fist. It is contraindicated if there are multiple tumors, if they are eccentrically placed, or if they are larger than the size of a fist, as experience has shown that in such patients neither the

symptoms nor the growths themselves are completely inhibited. It is contraindicated in the presence of adhesions, for these frequently supply the fibroid with a collateral source of nutrition which maintains its growth. The presence of adnexal disease or any active inflammatory process in the pelvis is a barrier to its use lest the devitalization produced by the radium should result in a spread of the infection. In younger women remote from the menopause or in whom fertility should be preserved, radium is contraindicated. The fibroid may meet the prescribed limitations, but the treatment, to be effective, will necessarily destroy follicle formation in the ovaries and precipitate the menopause. For these patients, myomectomy or subtotal hysterectomy is preferable.

The dosage ranges from 1,200 to 1,800 milligram hours, varying with the size of the tumor, the severity of the bleeding, and the age of the patient in relation to the menopause. Introduction of the radium capsule should always be preceded by a diagnostic curettage. The capsule container should be just long enough to lie entirely within the uterine cavity and cervical canal. Care must be taken to prevent the extrusion of the capsule. This is done by a light pack of the cervical canal, by a temporary stitch through both lips of the cervix, or by a long handled applicator the outer end of which is secured to the patient's thigh. Packing should be placed in the vagina to keep the bladder and rectum protected as usual but need not be so extreme as to cause discomfort or urinary retention. Radium is adequate for the control of the growth and the symptoms in 95 per cent of suitably selected patients. The effects are noticeable in from four to six weeks and reach a maximum in three months. There is cessation of bleeding, termination of menstruation, and a gradual shrinkage of the tumor. The failures require a repetition of the treatment not sooner than after six months.

In the United States, 287 hospitals and clinics report having radium. Of these, 128 have 75 mg. or more. Four hundred and fourteen physicians report having radium, of whom 171 have 75 mg. or more. Of nine laboratories with radium, five have 75 mg. or more. There are approximately 304 institutions and individuals each controlling 75 mg. or more (and triple that number have less than 75 mg.) of radium. Fifty milligrams is sufficient for the treatment of fibroids.

POISONING BY ILLUMINATING GAS FROM OIL DISTILLATE

To the Editor:—I should like to have you send me some information regarding poisoning from illuminating gas made from oil distillate. I am particularly interested in knowing the concentration necessary to produce ill effect on man and what changes and effect this has on the human body. Soon I must appear as a witness in court where a person is claiming serious and permanent consequences from the inhalation of this gas. She was sleeping in a room about fifty feet distant from a very small leak in a gas pipe, which was in the open. I should like an opinion as to whether she could possibly have inhaled enough of this gas to injure her. Please omit name and address. M.D.

ANSWER.—The third edition of "Combustion," a reference book published by the American Gas Association, New York, 1932, in table 53, states that the oil gas made on the Pacific Coast contains 12.7 per cent of carbon monoxide. This amount of carbon monoxide is somewhat higher than that in coal gas, which ranges from 6 to 11 per cent, or reformed natural gas containing from 9 to 10 per cent. Carbureted water gas contains from 30 to 40 per cent of carbon monoxide. Under the circumstances stated there would be no possibility of injury from a gas leak into the open at the distance stated.

TREATMENT OF SQUINT

To the Editor:—I have under treatment a boy, aged 5 years, with an alternating, intermittent, noncomitant, convergent squint of about 20 degrees in the right eye and 10 in the left. The central vision of the right eye is 6/7; of the left eye, 6/15. This has been present for the past two years and the child has not worn glasses. Retinoscopy after atropine cycloplegia shows a hyperopia of only one-half diopter. I am rather puzzled about this case because, as a general rule, cases of squint of this type usually show a total hyperopia of 2 diopters or more, and I am wondering whether the wearing of such a small correction will be of any benefit. I am of the opinion that the covering of the good eye is of doubtful value in alternating squint of this type and will welcome any suggestions for further treatment. Kindly omit name. M.D., North Dakota.

ANSWER.—It is extremely improbable that nonsurgical treatment will be of any great value in this case. In the majority of cases of alternating squint there is apt to be a greater hyperopia present than in this case, but the correction of the hyperopia alone will not cure the squint. The development of fusion is the deciding factor and in alternating squint that faculty is particularly dormant. As it is increasingly difficult

to develop fusion after the age of 6 years, it is advisable to bring about mechanical parallelism of the eyes as early as possible and follow the operative procedure with intensive orthoptic training. This should be done as soon as possible in the case here cited.

PHENANTHRENE

To the Editor:—In the Washington paper the *Pathfinder* I found a note to the effect that Drs. Lyndon F. Small and Nathan B. Eddy have found a non-habit-forming morphine called phenanthrene. Please advise me whether this is true. Can I get literature on the subject, and from whom? Can this drug be exported? M.D., Guatemala.

ANSWER.—Dr. Lyndon F. Small of the University of Virginia and Dr. Nathan B. Eddy of the University of Michigan are engaged under the auspices of the Drug Addiction Committee of the National Research Council in a systematic chemical and pharmacologic study of morphine and its derivatives and of substances synthesized from phenanthrene. It is hoped that this study will further search for a non-habit-forming morphine, but such a substance has not been found as yet. Two papers by Dr. Eddy on the pharmacologic side of this investigation have appeared (*J. Pharmacol. & Exper. Therap.* 45:339, 361 [July] 1932) and a third is in process of publication.

Phenanthrene is a comparatively simple substance which is obtained from anthracene oil. Methods for its purification have been described (Cohen and Cormier: *J. Am. Chem. Soc.* 52:4364 1930) and a description of its action in the body will be published by Dr. Eddy in the *Journal of Pharmacology and Experimental Therapeutics*. A partially hydrogenated phenanthrene forms the skeleton, to which are attached the active groups of the morphine molecule. Phenanthrene itself, however, is a but poorly soluble substance of very low toxicity and produces only a mild degree of depression in the animal body much like that following a small dose of a barbiturate. Aside from its very weak depressant action, the effects of phenanthrene in no way resemble those of morphine.

FISH FROM CONTAMINATED WATERS

To the Editor:—Please advise whether fish taken from waters heavily contaminated with sewage are considered safe for food purposes. Would there be the possibility of an intestinal infection with the colon-typhoid group of organisms in persons who have eaten undercooked fish from such waters? The stream considered receives approximately three fourths of the untreated sewage from a city of 20,000 population. Please omit name. M.D., Arkansas.

ANSWER.—Fish taken from polluted waters have not been commonly implicated in the causation of typhoid. This is probably chiefly because the intestinal contents of fish are generally removed in preparing fish for the table, and the fish are usually cooked at temperatures that destroy typhoid and related bacilli. Food animals taken from sewage-contaminated water and eaten raw, such as oysters, clams and mussels, are well known to be occasional sources of typhoid. London health authorities have traced some cases of typhoid to the use of fried small ungutted plaice. Under some conditions, therefore, imperfectly cooked fish from highly contaminated water may be dangerous.

TREATMENT OF MIGRAINE BY NONSPECIFIC DESENSITIZATION

To the Editor:—Cecil, in his "Textbook of Medicine," mentions a method proposed by Miller and Raulston (*THE JOURNAL*, June 30, 1923, p. 1894) for the treatment of migraine by the intravenous administration of 5 per cent peptone. What is the present status of this treatment? Is the peptone generally available and where? Have endocrine studies resulted in the discovery of any method of treatment more promising of results?

EDWARD F. MALLOY, M.D., Stamford, Conn.

ANSWER.—The writers cited have used and still use some intravenous peptone in the treatment of migraine. This is used on the basis of a nonspecific desensitization. About 20 per cent of these patients are entirely freed from their symptoms and remain desensitized for from six to eight weeks, when brief further treatment is necessary. There was a review of the whole subject of migraine by Dr. Peter Bassoe in *THE JOURNAL*, August 18.

PRIMARY LATERAL SCLEROSIS OR PYRAMIDAL TRACT DEGENERATION

To the Editor:—Please discuss the treatment of primary lateral sclerosis. Please omit name. M.D., Oregon.

ANSWER.—The term lateral sclerosis is used to designate bilateral degeneration of the pyramidal tracts from any cause, and consequently it denotes a syndrome and not a disease. The commonest causes of such degeneration are syphilis (Erb's

syphilitic spastic paraplegia), multiple sclerosis, and amyotrophic lateral sclerosis. In the latter disease there is also atrophy of the anterior horn cells. The term is also used for an exceedingly rare disease, primary lateral sclerosis, in which there is no lesion except pyramidal tract degeneration. This disease is so rare that even few experienced neurologists have ever seen a case.

EFFECTS OF CIGARETS CONTAINING MENTHOL

To the Editor:—Will there be any injury to the respiratory organs from the constant use of menthol, such as found in mentholated cigarettes, if a person uses one package daily? Please omit name.

M.D., New York.

ANSWER.—We do not know the results of any research work on the effect of smoking mentholated cigarettes. It is probable, however, that smoking this type of cigaret would not cause any injury to the respiratory organs. Work has been done with reference to the effect of menthol applied over long periods on the nasal mucous membrane of rabbits. It is doubtful whether the inhalation of cigaret smoke with a very slight amount of menthol in it would have any deleterious effects on the bronchial mucous membrane.

REMOVAL OF OVARY AND EFFECTS ON THE MENOPAUSE

To the Editor:—I am frequently asked if the removal of one ovary hastens the advent of the menopause any, and the literature seems to be silent on this question. Please omit name.

M.D., Texas.

ANSWER.—With the removal of one ovary, provided the remaining ovary is normal and the uterus is left in place, there should be no hastening of the menopause or of the menopausal molimina. If the uterus is removed with the one ovary there is a tendency at the present time to believe that the remaining ovary undergoes atrophy in a period of a few years because of the lack of uterus and endometrium for the ovary to act on.

CALCIUM LACTATE IN MIGRAINE

To the Editor:—I am told that calcium lactate is valuable in the treatment of migraine. If this is the case, can you advise me as to reasons, doses, and so on?

D. F. RUSSELL, M.D., Van Wert, Ohio.

ANSWER.—Calcium lactate, in doses of from 1 to 2 Gm. every hour or two for short periods, sometimes gives relief, which has been variously attributed to diminished permeability of the cells, thus lessening transudation, to improvement in autonomic nerve function, and to relief of spasm of unstriated muscle.

"HYPERESTHETIC OR VASOMOTOR RHINITIS"

To the Editor:—In THE JOURNAL, August 12, your reply on this subject deserves some comment. Your consultant states that "the fact that the patient sneezes shortly after arising indicates that probably house dust is the offending factor to which the patient is sensitive. House dust as a rule settles during the night when the air of a room is still, but after the patient rises and walks about, the air is stirred and the dust rises, is inhaled and causes sneezing."

While this explanation for morning sneezing is ingenious, it is not in keeping with clinical observation. In the first place, the morning sneezing occurs not only in dust-sensitive patients but in the majority of instances of hyperesthetic rhinitis. This will also occur in a room made dust free and in which the air is filtered. Furthermore, it applies to food-sensitive patients as well as to those who are irritated by inhalants. Frequently the mere raising of the head from the pillow will induce an attack.

These morning spasms are often relieved by a clearing of the nose of its secretions and by the ingestion of foods or liquid. Although I make no claim for an absolute explanation of the phenomenon of morning sneezing in hyperesthetic rhinitis, clinical observations favor the following as possible causes: increased nervous irritability due to waking from sleep, physiologic and vascular changes in the nose due to change in position, metabolic changes during the night which may reach their maximum in the morning, and exposure to temperature changes on arising from bed.

S. M. FEINBERG, M.D., Chicago.

MILK AND MOLASSES ENEMA

To the Editor:—In THE JOURNAL, August 19, is an inquiry as to the origin of the milk and molasses enema. About forty years ago, when Dr. Nicholas Senn was making a trip round the world studying the various medical procedures of all nations, he came back from India with the efficacy of the milk and molasses enema. A short while afterward when the late Dr. Ap Morgan Vance of this city ordered a milk and molasses enema for a patient of mine in St. Joseph Infirmary, there happened to be present a returned medical missionary from India, and she said: Dr. Vance, where did you get that idea? I didn't think it was ever used anywhere except in India." Whether or not that was a remedy in India since the time of Hippocrates, I cannot say.

W. F. BOGESS, M.D., Louisville, Ky.

UNIVERSITY OF WASHINGTON SCHOOL OF NURSING Council on Medical Education and Hospital Administration

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Boston, Chicago, Cleveland, New York, Philadelphia, St. Louis and San Francisco, Oct. 28. *Oral*. New York, Dec. 15-16. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B Candidates)*. The examinations will be held in various cities of the United States and Canada, Dec. 9. Application necessary before Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

ARIZONA: Phoenix, Oct. 3-4. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

CALIFORNIA: *Regular*. Sacramento, Oct. 16-19. *Reciprocity*. Sacramento, Oct. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 3. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Oct. 14. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

GEORGIA: Atlanta, Oct. 10. Joint Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 3. Dir., Mr. F. L. Cruikshank, Boise.

ILLINOIS: Chicago, Oct. 17-19. Supt. of Regis., Mr. Eugene R. Schwartz, Springfield.

MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. J. E. McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 3-4. Sec., Dr. J. J. Hall, University of Minnesota, Minneapolis, Oct. 17-19. Sec., Dr. E. J. Engberg, 350

MISSOURI: Kansas City, Oct. 17-19. State Health Commissioner, Dr. E. T. McLaugh, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: *Basic Science*. Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

RHODE ISLAND: Providence, Oct. 5-6. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

TENNESSEE: Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

WISCONSIN: *Basic Science*. Madison, Sept. 23. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Nebraska June Examination

Mrs. Clark Perkins, director, Bureau of Examining Boards, reports the written examination held at Omaha, June 7-8, 1933. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fifty-seven candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine.....	(1932)		80.9
Creighton University School of Medicine.....	(1932)		83.7,
(1933) 79.2, 80.2, 82.3, 83.2, 84.2, 84.5, 85.8, 86, 86.9, 88.3, 88.8,			
University of Nebraska College of Medicine.....	(1931)		80,
80.1, (1932) 81.3, 81.5, 82.2, 82.9, 83.3, 84.2, 84.3, 84.3, 86, (1933)			
79.6, 79.6, 79.9, 79.9, 80.6, 80.8, 80.9, 81, 81.6, 81.7, 81.9, 82.1, 82.6			
82.7, 82.9, 83.4, 83.4, 84.3, 84.5, 84.6, 84.9, 85.1, 85.3, 85.3, 85.4,			
85.6, 85.9, 86.4, 86.4, 86.5, 86.5, 88.1			

Two physicians were licensed by reciprocity, March 29 and April 17, respectively. The following college was represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine..	(1908), (1930)		Arkansas

North Dakota July Examination

Dr. G. M. Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held in Grand Forks, July 4-7, 1933. The examination covered 13 subjects and included 90 questions. An average of 75 per cent was required to pass. Twelve candidates were examined, 11 of whom passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Rush Medical College.....	(1933)		81.5
Northwestern University Medical School.....	(1932)		78
University of Louisville School of Medicine.....	(1932)		77.5
University of Minnesota Medical School.....	(1915)		80.5
(1931) 75, (1933) 82.5			

Creighton University School of Medicine.....	(1932)	82	
Temple University School of Medicine.....	(1932)	80	
Baylor University College of Medicine.....	(1932)	79	
University of Manitoba.....	(1933)	81	
University of Toronto Faculty of Medicine.....	(1921)	80	
College	FAILED	Year	Per Cent
University of Minnesota Medical School.....	(1932)	Grad.	72

Arizona July Examination

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held in Phoenix, July 5-6, 1933. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Three candidates were examined, 1 of whom passed and 2 failed. Four physicians were licensed by reciprocity with other states, July 27. The following colleges were represented:

College	PASSED	Year	Per Cent
University of Michigan Medical School.....	(1930)	Grad.	86
College	FAILED	Year	Per Cent
University of Kansas School of Medicine.....	(1931)	Grad.	72
Osteopath			68
College	LICENSED BY RECIPROCITY	Year	Reciprocity
University of Colorado School of Medicine.....	(1928)	Grad.	with Iowa
Kentucky School of Medicine.....	(1893)		Missouri
University of	(1913)		Kentucky
Kansas City M.	(1896)		R. Island

Book Notices

Medicolegal Cases: Abstracts of Court Decisions of Medicolegal Interest, 1926-1930. Edited by Wm. C. Woodward, M.D., LL.M., Director, Bureau of Legal Medicine and Legislation, American Medical Association. Reprinted from "The Journal of the American Medical Association," 1926-1930, inclusive. Cloth. Price, \$7. Pp. 1336. Chicago: American Medical Association, 1932.

What the courts have decided concerning a particular disease or injury, and how they have arrived at their decisions, are matters of prime importance to every one who must know what the law is concerning that disease or injury or similar diseases and injuries. The decisions of trial courts and of many of the intermediate appellate courts are not published or are published only locally. They are therefore not generally accessible. The decisions of some of the more important intermediate appellate courts and of all appellate courts of last resort are published, filling about 300 volumes annually, and every one has access to them. Through indexes and digests of those reports, any one can learn what the courts have decided; but even to one familiar with methods of legal research the task is more or less difficult, and to one not familiar with such methods it is practically impossible. If the problem under investigation relates to diseases and injuries, the difficulty is increased by reason of the fact that neither indexes nor digests to law reports are arranged with particular reference to medical and surgical matters.

The American Medical Association has published weekly in THE JOURNAL, for many years, abstracts of court decisions of medicolegal interest, for the information and guidance of physicians and others interested. Because of many inquiries concerning the publication of these abstracts in book form, the Association has now published in a single volume some of the more recent abstracts, with the expectation of publishing similar volumes at stated intervals if the demand for the first volume is sufficient. Such is the history of the book here under review. It is obviously a book of reference, not a book for casual or even systematic reading or for class room purposes. The abstracts it contains, covering some thirteen hundred court decisions in all, were published in THE JOURNAL during the five-year period 1926-1930, inclusive. They cover, it is stated, probably all decisions of substantial medicolegal interest published in the law reports during the five years ended, approximately, April, 1930. While the abstracts in the earlier part of the volume have a more or less legalistic tone, they are readily understandable by any intelligent reader. In the later abstracts there is apparent a greater effort to coordinate the medical and the legal facts underlying the decisions, so as

to enable physician, lawyer, claim agent, insurance adjuster or other investigator to determine conveniently whether any given decision is pertinent to the case that he at the moment has under consideration, before he resorts to the published decision itself for further information. The publication of these abstracts in the chronological order in which they appeared in the weekly issues of THE JOURNAL, and not according to a topical arrangement, has made necessary an exceptionally exhaustive index. The index is in fact the heart of the volume. Entries are based on both medical and legal terminology, for the convenience of physicians, lawyers and laymen. A table of cases is included in the book.

This volume will, it is believed, serve a useful purpose for physicians, lawyers, claim agents and insurance adjusters. It should be of service to workmen's compensation boards, medical examining and licensing boards, and state and local boards of health, and to the officers and employees who carry on the activities of such agencies. The book seems, therefore, to be an essential part of every medical library. Because it facilitates research into the medical and surgical aspects of legal problems, it should prove useful in law libraries also.

Sécrétion Interne et régénérescence: Essais expérimentaux cliniques et chimico-biologiques sur les phénomènes de régénérescence dans des conditions physiologiques (sénilité) et pathologiques. Therapie protoformative multispecifica. Par le Dr. N. E. Ischlondsky. Paper. Price, 90 francs. Pp. 336, with 72 illustrations. Paris: G. Dolin & Cie, 1933.

The author justly condemns the misleading term "rejuvenation." He points out that the conceptions of Brown-Séquard, Voronoff, Steinach, Cavazzi and Doppler are based on neither scientific substrata nor sound clinical observation. He spent twelve years in studying the chemophysiology of the internal secretions of the embryo and asserts that he has isolated substances which, when injected into aging individuals, result in a definite regeneration of the affected tissues. This form of therapy Ischlondsky designates as "incretin treatment" or as "therapia protoformativa multispecifica." More than 400 cases were observed. Ischlondsky divides these into (a) senile persons and (b) young individuals suffering from disease. He condemns "substitution therapy" by hormones as practiced today. It should be replaced, he insists, by his "only true, sensible method." A careful perusal of the work fails to disclose the method of obtaining the "incretory substances" referred to, except that they are obtained from embryos in the third or fourth month. On page 240 a few lines are given on the technic of injection, which is nothing more than a description of routine hypodermic medication. On page 239 the author speaks of having abandoned the "biologic dose" and now uses a "chemical dose." He states that it may be given either "single" or "double," the former containing 0.015 Gm. of "incretory complex." This vague information rests on a flimsy substratum and is of no informative value. The reader is struck by the extraordinary results the author claims to have obtained in such major clinical entities as angina pectoris, arteriosclerosis and grave diabetes. Until full scientific data are furnished on the method of preparation and use of this substance, its heralded value to scientific medicine remains questionable.

Physician's Handbook of Community Resources in Metropolitan Boston Together with Certain Legal Responsibilities. Published under the Auspices of the Massachusetts General Hospital. Paper. Price, 50 cents. Pp. 47. Boston, 1933.

This little pamphlet is similar in purpose and scope to the Medical Blue Book of Wisconsin, published by the State Medical Society of Wisconsin in 1929, and the Medicolegal Digest, 1931-1932, published by the Colorado State Medical Society. It should prove valuable not only to physicians practicing in Metropolitan Boston, for whose use primarily it has been prepared, but to all physicians practicing in the commonwealth of Massachusetts. The information it contains relating to registration for the practice of medicine, to reporting diseases, accidents, births and deaths, to prescribing, administering and dispensing narcotic drugs and alcoholic liquors, to possessing and using hypodermic instruments, and to industrial injuries and occupational diseases is as applicable elsewhere in the commonwealth as it is in the metropolitan area. To physicians practicing in Metropolitan Boston there is much of interest and value in the information concerning special diagnostic and

therapeutic facilities available there, the convalescent and nursing services and local resources for special social problems, and other matters. Such information not infrequently is urgently needed by physicians and social workers, and somehow it always seems most difficult to obtain at the time when the emergency is greatest.

This pamphlet was published under the auspices of the Massachusetts General Hospital, a private corporation. The initial cost of printing was borne by an anonymous donor. The pamphlet is being sold for 50 cents a copy, and the proceeds are being reserved to pay for the publishing of later editions if they are needed. The text covers thirty-six pages, there is an ample index, and blank pages are included on which to enter additional information as circumstances require. With this handbook and the handbooks published by the State Medical Society of Wisconsin and the Colorado State Medical Society as patterns, the several state medical societies throughout the country, and possibly some of the larger and more prosperous county societies, might well undertake to issue similar publications. The cost of preparing and publishing the Colorado Medicolegal Digest seems to have been defrayed in part by the proceeds of advertising, and so long as the advertising is legitimate and ethical advertising there seems to be no reason why that course should not be followed.

Chemical Laboratory Manual. By L. Jean Bogert, Ph.D., Instructor in Experimental Medicine, Yale Medical School. Prepared to accompany Bogert's "Fundamentals of Chemistry," third edition, revised. Second edition. Cloth. Price, \$1.50. Pp. 142, with illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

This manual provides simple experiments to correlate and illustrate the subject matter in the author's textbook of general chemistry. There are questions for each experiment which attempt to bring out the underlying principles. A general plan of study with parallel textbook and laboratory assignments is presented in tabular form. Experiments in inorganic and organic chemistry are included. The latter include the carbohydrates, fats, proteins, digestion, and a few experiments on blood and urine. The book is too brief for the medical student who devotes considerable time to the important subject of chemistry. For general courses given to nonmedical students, for domestic science students and for nurses, the manual will be useful. Teachers of such courses will find in this book valuable suggestions for the outlining of a general course in chemistry.

Urine and Urinalysis. By Louis Gershenfeld, Ph.M., B.Sc., P.D., Professor of Bacteriology and Hygiene and Director of the Bacteriological and Clinical Chemistry Laboratories at the Philadelphia College of Pharmacy and Science. Fabrikoid. Price, \$2.75. Pp. 272, with 36 illustrations. Philadelphia: Lea & Febiger, 1933.

In this small book the author presents the approved laboratory methods of urinalysis together with a proper evaluation of the practical value of the results obtained from the various tests. He rightly emphasizes in his preface the importance of the closest cooperation between the physician and the laboratory worker. The relative value of the different tests and the practical importance of the knowledge gained from each are emphasized throughout the book. Part I discusses the structure and function of the kidney, the physical characteristics of the urine, its chemical composition, and abnormal constituents of urine. Part II contains the qualitative and quantitative tests and microscopic examination. Part III includes special tests and discusses urinary calculi, tests infrequently performed or of doubtful clinical value, and tests for kidney function. An appendix describes apparatus used occasionally in urinalysis, as colorimeter, nephelometer and spectroscope. There is also a list of reagents. Physicians, technicians and nurses who desire an authoritative monograph on every phase of urine examination will be delighted with this new book.

The Treatment of Functional Nerve Cases by the Method of Neuro-Induction: An Essay. By Leonard Inkster, M.A., M.R.C.S., Hon. Clinical Assistant of the Tavistock Square Clinic. Boards. Price, 3s 6d. Pp. 73. London: H. K. Lewis & Company, Ltd., 1933.

This method consists of waking suggestion given during physical relaxation of the patient. The author's manner is sincere but chatty. Nothing novel is offered to neuropsychiatrists; non-neurologic practitioners may grasp the plan readily and use it effectively in certain types of neurotic maladjustment.

Food and the Principles of Dietetics. By Robert Hutchison, M.D., F.R.C.P., Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond Street, and V. H. Mottram, M.A., Professor of Physiology at King's College of Household and Social Science, University of London. Seventh edition. Cloth. Price, \$7.25. Pp. 630, with 33 illustrations. Baltimore: William Wood & Company, 1933.

This summation of established knowledge and important data on the science of foods and dietetics has been brought down to the date of publication. It is a valuable textbook for students and practitioners of medicine and those desiring a general basic knowledge of foods and nutrition. All classes of common foods and the important problems of nutrition are given appropriate attention. References to important original papers are given in footnotes. The subject matter is simply and clearly presented.

Leçons sur l'alimentation: Physiologie, régimes. Par Giovanni Lorenzini, professeur de chimie biologique à la Faculté de médecine de l'Université royale de Milan. Paper. Price, 36 francs. Pp. 325. Paris: Masson & Cie, 1933.

This monograph is probably an elaboration of the series of lectures given by Professor Lorenzini to his students in nutrition. In the first five lectures he covers in an excellent manner the physiologic factors underlying the metabolism of food. The sixth lecture deals rather briefly with the vitamins and ferments. The seventh lecture is a classification of the various foods into their common divisions of proteins, fats and carbohydrates, with a description of the chief foods of each group; also the composition and caloric value of the foods in common use are given. In the remaining seven lectures are given the underlying principles of treatment of the various diseases in which dietary management is important. In the allocation of space it would seem that the dietary problems connected with diabetes are treated too briefly and without sufficient detail for the practical dietetic management of this disease. Unfortunately there is no index and the table of contents is brief.

Probation and Criminal Justice: Essays in Honor of Herbert C. Parsons. Edited by Sheldon Glueck, Professor of Criminology, Harvard Law School. Cloth. Price, \$3. Pp. 344. New York: Macmillan Company, 1933.

Glueck and his collaborators discuss probation under five headings: significance and legal background of probation, organization and administration of probation, the granting of probation, the art of probation, and the growth and extent of probation. Under these headings, individual contributors write of the promise of probation, its legal problems, the organization of a probation service, the probation problems of a trial judge, case histories, social workers' technic, analytic psychiatry and criminology, the growth of federal and state probation in the United States, and probation services in other countries. To one who is interested only in the medical aspects of probation, the book may prove disappointing. Only one chapter is devoted to this topic, the chapter on analytic psychiatry and criminology, by Dr. Bernard Glueck, based on a purely psycho-analytic foundation. Whether it proves entirely satisfying to the medical reader will probably depend on the extent to which he accepts the id, the ego, and the super ego as the whole of life. The volume is, however, well worth a careful reading by any one who is interested in the establishment of criminal justice.

Urology in Women: A Handbook of Urinary Diseases in the Female Sex. By E. Catherine Lewis, M.S., F.R.C.S., Surgeon to the Royal Free Hospital, London. Cloth. Temporary price, \$1.75. Pp. 76, with 25 illustrations. Baltimore: William Wood & Company, 1933.

As the preface states, this is a little book, containing a scanty seventy-three pages of text in addition to numerous halftone and colored illustrations. The subject matter is divided into sections corresponding in context to the four anatomic divisions of the urinary tract; namely, the urethra, bladder, ureter and kidney. After a brief description of the anatomy of each division and the most frequent pathologic changes found, the more common methods of treatment are described. The anatomic descriptions and methods of diagnosis are abbreviations of those found in the standard textbooks. The forms of treatment recommended are those in more common use, and it is to be regretted that no attempt is made to discuss newer procedures. This is particularly striking in the section on renal infections (pyelitis and pyelonephritis); the more recent advances in dietary and intravenous chemical treatment are omitted. The book

will serve as a short outline of the better established ideas concerning diseases of the female urinary tract, their cause, pathology and treatment, and should be of assistance to those desiring this information compiled in a single treatise.

Medicolegal

Malpractice: Failure to Exercise Requisite Skill Constitutes Negligence.—The plaintiff fractured her right leg near the ankle. She was under the defendant's care for a few days and then placed herself under the care of another physician. Ten days after this change of physicians, gangrene made it necessary to amputate her foot. The plaintiff sued the defendant, contending that the gangrene was caused by his negligence and unskillfulness in putting on a cast and that he was negligent and unskillful in other ways. From a judgment in favor of the defendant, the plaintiff appealed to the Supreme Court of Missouri, division number 2. The trial court, she contended, had directed a verdict for the defendant unless the jury found that he had been guilty of negligence, whereas he was charged with both negligence and unskillfulness. She was entitled to a verdict, she contended, if the defendant was either negligent or unskillful and the loss of her leg resulted from his negligence or unskillfulness.

The plaintiff, said the Supreme Court, did not charge the defendant with undertaking to treat her without *possessing* the requisite knowledge and skill; she charged him only with failure to *exercise* care and skill. Failure of a physician to exercise the degree of care and skill required of him is negligence. Technically the instruction of the trial court was correct when it told the jury that the plaintiff charged the defendant with negligence, which the plaintiff was required to prove. The term "negligence," said the court, covers not only lack of care but also the failure to exercise skill which the defendant possesses or the attempt to exercise skill which the defendant knows he does not possess. *Rothschild v. Barch*, 324 Mo. 1121, 26 S. W. (2d) 760. The judgment of the trial court was affirmed.—*Semert v. McKay* (Mo.), 56 S. W. (2d) 105.

When Statute of Limitations Begins to Run: When It Is Suspended by Fraudulent Concealment of Facts.—On Jan. 24, 1927, the plaintiff sued the defendant physician for malpractice. She claimed that when he treated her for a "slight and incipient sore throat" in January, 1919, he negligently and unnecessarily removed her tonsils, that he failed to apply proper local treatment after their removal, and that her throat became "poisoned and infected" as a consequence. She contended that the acts and omissions of the defendant from the time of the removal of her tonsils, in 1919, until the termination of her professional relations with him, in October, 1926, constituted "a perpetual series of continuing negligence." The defendant physician, with intent to deceive her and to induce her to refrain from bringing an action against him, she alleged, fraudulently concealed his negligence from her; she relied on his representations and was misled thereby; only since Oct. 2, 1926, did she become aware that the condition of her throat was proximately caused by the defendant's negligence. He, the plaintiff claimed, was estopped by his alleged deceit from pleading that her cause of action was barred by the statute of limitations. The defendant demurred to the complaint, contending that the action was so barred. The trial court sustained his demurrer, and the plaintiff appealed to the Supreme Court of Utah.

Ordinarily, said the Supreme Court, the cause of an action based on the neglect of duty accrues at the time of the neglect, and the statute of limitations begins to run then. In this case, however, the plaintiff alleged not only that the defendant negligently and unskillfully operated on her in 1919 but also that he continued to treat her throat in a negligent manner until 1926. The case falls properly, the court thought, within the rule stated in *Sly v. Van Lengen*, 120 Misc. 420, 198 N. Y. S. 608, wherein it was said:

Where a physician in performing an operation failed to remove a sponge from plaintiff's pelvic cavity, and did not remove it thereafter, though

he continued to treat her for more than 2½ years, plaintiff's cause of action was not barred . . . because suit was not brought till more than 2 years after the operation; the tort being continuing, and the period of the statute not beginning to run until the physician ceased his treatments.

The Supreme Court concluded, therefore, that the cause of action in this case did not accrue until the termination of the defendant's services in 1926.

By the weight of authority, said the court, a fraudulent concealment of a cause of action will postpone the operation of the statute of limitations until the discovery of the fraud. As a general rule, however, in the absence of a trust or fiduciary relation between the parties, a withholding or concealing of known facts is not such a fraudulent concealment as will prevent the running of the statute. But in this case the relation of physician and patient existed, and the plaintiff necessarily imposed trust and confidence in the defendant, her physician. Although the defendant's alleged assurances that treatment would cure the plaintiff's throat were in the nature only of an opinion, and therefore not a proper basis for an action for failure to cure, nevertheless they were pertinent and relevant to the purposes of the suit. They had a bearing on the confidence and reliance placed in the defendant by the plaintiff when she submitted to his long continued treatment and on her delay in enforcing whatever cause of action she had. The plaintiff's statement of facts was possibly not so specific and certain as to be beyond criticism, but though the facts may have been insufficiently stated, the complaint was not for that reason subject to a general demurrer. Sufficient facts, the Supreme Court concluded, were stated with respect to the alleged fraud, and the trial court erred in holding that on the face of the plaintiff's complaint her action was barred. The judgment of the court below was reversed and the case remanded.—*Peteler v. Robison* (Utah) 17 P. (2d) 244.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Boston, September 18-22. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Executive Secretary.
- American College of Surgeons, Chicago, October 9-13. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
- American Public Health Association, Indianapolis, October 9-12. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.
- American Roentgen Ray Society, Chicago, September 25-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.
- Associated Anesthetists of the United States and Canada, Chicago, October 8-12. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
- Association of American Medical Colleges, Minneapolis, Oct. 30-Nov. 1. Dr. Fred C. Zapffe, 5 South Wabash Avenue, Chicago, Secretary.
- Association of Military Surgeons of the United States, Chicago, September 25-27. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.
- Central Society for Clinical Research, Chicago, Nov. 3. Dr. Lawrence D. Thompson, 903 University Club Building, St. Louis, Secretary.
- Delaware Medical Society of Wilmington, September 26-27. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.
- Idaho State Medical Association, Twin Falls, September 18-19. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.
- Indiana State Medical Association, French Lick, September 25-27. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 16-20. Dr. W. B. Peck, 12½ East Stephenson Street, Freeport, Ill., Managing Director.
- Kansas City Southwest Clinical Society, Kansas City, Mo., October 3-5. Dr. Lewis G. Allen, 601 Minnesota Avenue, Kansas City, Kan., Secretary.
- Mississippi Valley Conference on Tuberculosis, Kansas City, Mo., October 6. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.
- Nevada State Medical Association, Las Vegas, September 29-30. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.
- New England Surgical Society, Boston, September 29-30. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.
- Oregon State Medical Society, Portland, Oct. 26-28. Dr. Albert W. Holman, 364 Washington Street, Portland, Secretary.
- Pennsylvania Medical Society of the State of Philadelphia, October 2-5. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.
- Southern Minnesota Medical Association, New Ulm, September 25. Dr. M. C. Piper, Mayo Clinic, Rochester, Secretary.
- Vermont State Medical Society, Barre, October 5-6. Dr. W. G. Ricker, 31 Main Street, St. Johnsbury, Secretary.
- Virginia Medical Society of Lynchburg, Oct. 24-26. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology Baltimore

3: 111-180 (March) 1933

Viability of Tubercle Bacilli: Effect of Mechanical Shaking and Chemicals Used in Concentration Technic. J. E. Pottenger, Monrovia, Calif.—p. 111.

*New and Simplified Medium for Pasteurella Tularensis and Other Delicate Organisms. B. W. Rhamy, Fort Wayne, Ind.—p. 121.

Study of Pathogen-Selective Cultures in Relation to Vaccine Therapy. F. Boerner and M. Solis-Cohen, Philadelphia.—p. 125.

Study of O and H Agglutinins in Typhoid and Endemic Typhus Fever. H. A. Kemp, Dallas, Texas.—p. 133.

Exploring Death. H. J. Corper, Denver.—p. 145.

Lymphomatous Compression of Spinal Cord: Case Report of Hodgkin's Type. F. H. Lamb, Davenport, Iowa.—p. 155.

*"Sensitivity" to Sulphydryl. S. P. Reimann, Philadelphia.—p. 167.

Pasteurella Tularensis.—Rhamy has evolved a medium that gives a luxuriant growth of Pasteurella tularensis within from three to four days, of creamy gray color, furnishing ample material for making an antigen. The new medium is made by mixing Spray's Bacto hemoglobin in equal parts with Bacto cystine heart agar, the latter of which is essentially a modified Huntoon hormone agar. To prepare 500 cc. of the medium, 28 Gm. of Bacto cystine heart agar is dissolved by boiling in 250 cc. of distilled water, and 5 Gm. of Bacto hemoglobin is dissolved in an equal amount of water and strained through gauze in order to remove any large undissolved particles. Both solutions are sterilized separately for twenty minutes at a pressure of 15 pounds. When the solutions have cooled to 50 or 60 C. they are mixed, dispensed in test tubes and incubated to test the sterility.

Sensitivity to Sulphydryl.—Reimann painted local areas of the skin of the arms of 450 normal persons with a 1 per cent alcoholic solution of thiocresol and a control area on the other arm with a 1 per cent solution of cresol. Of these, eighteen presented an itching rash. Of seventy-seven similarly treated persons presenting carcinomas, five reacted, all of whom had open, ulcerating wounds; the region around the wound also reacted. The special significance of this "sensitivity" to the sulphydryl group is unknown, but it is probably related to the general phenomena of sensitivity to specific chemical groups and arrangements. Since the use of the sulphydryl group in p-thiocresol and other compounds is increasing, attention is drawn to this phenomenon. At present it is recommended that, in those who react, treatment be discontinued and that such treatment of ulcerating carcinomatous wounds be avoided in this group.

Archives of Neurology and Psychiatry, Chicago

29: 935-1178 (May) 1933

*Meningeal Fibroblastomas of Cerebrum: Clinicopathologic Analysis of Seventy-Five Cases. C. H. Frazier and B. J. Alpers, Philadelphia.—p. 935.

Encephalopathia Alcoholica (Polioencephalitis Haemorrhagica Superior of Wernicke). Lauretta Bender and P. Schilder, New York.—p. 990.

Partial Agenesis of Corpus Callosum. R. C. Baker and G. O. Graves, Columbus, Ohio.—p. 1054.

Pathology of Central Nervous System in Diseases of Liver: Experiments with Animals and Human Material. L. A. Crandall and A. Weil, Chicago.—p. 1066.

Rôle of Vestibular Nuclei in Cortical Innervation of Eye Muscles. E. A. Spiegel, Philadelphia.—p. 1084.

*Myelomalacia in Streptococcus Haemolyticus Meningitis: Clinicopathologic Study of Rare Complication in Meningitis. G. A. Blakeslee, A. Ferraro and M. F. Jones, New York.—p. 1098.

Dystonia Musculorum Deformans: Clinicopathologic Study. C. Davison and S. P. Goodhart, New York.—p. 1108.

Meningeal Fibroblastomas of Cerebrum.—Frazier and Alpers analyzed a group of seventy-five cases of meningeal fibroblastoma. Most of the tumors were located over the

anterior half of the brain. There were twenty-two frontal fibroblastomas. Among these have been identified four types of syndrome. There is no picture common to all the frontal fibroblastomas. Mental symptoms were lacking in three fifths of the cases. In the eighteen precentral fibroblastomas, weakness and motor jacksonian attacks were important aids in diagnosis. Eighteen fibroblastomas were over the temporal lobes. Only eight caused weakness or hemianopia, and two aphasia. Eight tumors were over the parietal lobes. Sensory jacksonian attacks and astereognosis were helpful in establishing a localization. Of the nine tumors of the occipital lobe, four caused hemianopia and four aphasia. The authors call attention to the relative intactness of central vision in cases of tumors of the occipital lobe, as contrasted with cases of tumor of the temporal lobe, in which central vision is usually implicated. From the pathologic standpoint, they favor the term meningeal fibroblastoma, calling attention to the fact that these tumors do not arise in every instance from the arachnoid. They call attention to the problem of hyperostoses in the fibroblastomas, reporting an instance of thinning of the overlying bone with invasion of the bone by tumor cells, casting some doubt on the hypothesis that the hyperostoses are due to proliferation of osteoblasts under stimulus of the invading tumor cells.

Myelomalacia in Meningitis.—Blakeslee and his associates present a case of myelomalacia of sudden onset as the result of a Streptococcus haemolyticus meningitis. The necropsy observations consisted of leptomeningitis and pachymeningitis in the lumbosacral region, with occlusion of the vessels of the spinal cord by pressure and the formation of a thrombus, resulting in myelomalacia. Above this, an area of softening in the left posterior horn and column, secondary to a thrombosis of the posterior spinal artery, accounted for anesthesia up to the level of the ninth thoracic dermatome. The authors believe that, in their case, laminectomy to assist in drainage might possibly have prevented the development of the localized pachymeningitis and leptomeningitis with the resultant softening of the cord.

California and Western Medicine, San Francisco

38: 337-408 (May) 1933

Medicine at the Crossroads. R. L. Wilbur, Stanford University.—p. 337.

Report of Committee on the Costs of Medical Care: Its Significance to the Medical Profession. A. C. Christie, Washington, D. C.—p. 341.

Some Trends in Medical Economics. R. G. Leland, Chicago.—p. 348.

Antivivisection. C. Rowell, Berkeley.—p. 352.

Dehydration in Heat Exhaustion and Fatigue. C. Van Zwalenburg, Riverside.—p. 354.

Focal Infections: In Relation to Cardiac and Vascular Disease. W. H. Strietmann, Oakland.—p. 358.

*Onchocercosis in North America. H. G. Johnstone and A. E. Larsen, San Francisco.—p. 361.

Pan-American Medical Association: Report on Fourth Congress. C. P. Mathé, San Francisco.—p. 365.

Onchocercosis.—Johnstone and Larsen point out that onchocercosis may seem a medical curiosity to physicians of the temperate zone since it has no immediate attendant public health problems, but one should become acquainted with it for the following reasons: 1. Clinical manifestations of onchocercosis resemble many conditions of the temperate zone. 2. The Eusimulium fly is widespread in certain localities throughout the Western states. 3. The disease has shown a definite tendency toward a northern migration. 4. The numerous Mexican immigrants in the United States provide an opportunity for the presence of a carrier of Onchocerca caecutiens. This may lead subsequently to the contamination of our own simuliid species. If this occurs, a case of the disease is sure to make its appearance and, once present, it is difficult to eradicate. There is no known drug that will kill the wandering microfilariae. The encysted adults are also safe from the action of any known filariacide. Consequently there remains only the removal of the source of infection; that is, surgical removal of the nodules. Frequently this procedure is followed by a remarkable clearing of symptoms. This is true especially in the acute cases, in which the relief occurs over night. But even when the disease has become chronic this surgical procedure is of benefit. The case should not be dismissed but observed from time to time to watch for the development of nodules that may have been too small to be detected at the

time of the previous examinations. Frequently a residual blindness may remain, which, however, can often be helped by iridectomy.

Delaware State Medical Journal, Wilmington

5: 71-106 (April) 1933

- Psychiatry in College. M. A. Tarumianz, Farnhurst.—p. 71.
Inheritance of Mental Deficiency. P. F. Elfeld, Farnhurst.—p. 76.
Psychosis with Cerebral Syphilis: Case with Negative Serology. J. W. Ballard, Farnhurst.—p. 80.
Juvenile Delinquency. C. Uhler, Farnhurst.—p. 81.
Carbon Dioxide and Oxygen in Treatment of Schizophrenia. C. R. Bennett, Farnhurst.—p. 85.
Juvenile Paresis: Case. M. Littner, Farnhurst.—p. 88.

Journal of Biological Chemistry, Baltimore

100: 603-822 (May) 1933

- Studies on Magnesium Deficiency in Animals: III. Chemical Changes in Blood Following Magnesium Deprivation. H. D. Kruse, Elsa R. Orent and E. V. McCollum, Baltimore.—p. 603.
Character of Dermatitis-Producing Factor in Dietary Egg White as Shown by Certain Chemical Treatments. Helen T. Parsons and Eunice Kelly, Madison, Wis.—p. 645.
Studies on Physiology of Pyrimidines: VII. Metabolism of Isobarbituric Acid in Man. J. A. Stekol and L. R. Cerecedo, New York.—p. 653.
Substances Which Interfere with Antimony Trichloride Test for Vitamin A. Ruth E. Corbet, Helen H. Geisinger and H. N. Holmes, Oberlin, Ohio.—p. 657.
Concentration of Soy Bean Urease: New Method for Purification of Enzymes. J. S. Kirk, Ithaca, N. Y.—p. 667.
Digitalis Glycosides: VII. Isomeric Dihydrogitoxigenins. W. A. Jacobs and R. C. Elderfield, New York.—p. 671.
Maximum Rotations of Phenyl Compounds. P. A. Levene and R. E. Marker, New York.—p. 685.
Copper Iodometric Reagents for Sugar Determination. P. A. Shaffer and M. Somogyi, St. Louis.—p. 695.
Growth, Reproduction and Lactation in Absence of Parathyroid Glands. F. L. Kozelka, E. B. Hart and G. Bohstedt, Madison, Wis.—p. 715.
Adsorption of Vitamin B (B_1) by Plant Tissue: I. Adsorption of Vitamin B (B_1) by Brassica Chinensis When Pickled with Salt and Rice Bran. C. D. Miller and Marjorie G. Abel, Honolulu, Hawaii.—p. 731.
Is Blood Protein Amide Nitrogen a Source of Urinary Ammonia? IV. Improved Aeration Set for Use in Transfer and Measurement of Small Quantities of Ammonia. E. F. Williams, Jr., and T. P. Nash, Jr., Memphis, Tenn.—p. 737.
Derivatives of Glucuronic Acid: II. Acetylation of Glucuron. W. F. Goebel and F. H. Babers, New York.—p. 743.
*Practical Method for Simultaneous Estimation of Lactose and Glucose in Urine. I. S. Kleiner and H. Tauber, New York.—p. 749.
Salt Economy in Extreme Dry Heat. D. B. Dill, B. F. Jones, H. T. Edwards and S. A. Oberg, Boston.—p. 755.
Configurational Relationship of Hydrocarbons: V. Optical Rotations of Hydrocarbons of Isopropyl Series. P. A. Levene and R. E. Marker, New York.—p. 769.
Cystine Content of Human Serum Proteins. L. R. Tuchman and Miriam Reiner, New York.—p. 775.
Tyrosine and Cystine Content of Serum Proteins. Miriam Reiner and H. Sobotka, New York.—p. 779.

Determination of Lactose and Dextrose in Urine.—Kleiner and Tauber outline a new colorimetric method for the quantitative determination of lactose and dextrose in the urine. The procedure is as follows: To 1 cc. of urine in a graduated 20 cc. cylinder, 1 cc. of a 4 per cent solution of copper sulphate is added, and then enough barium hydroxide solution to make the fluid faintly alkaline to litmus (approximately pH 7.5 to 8); 5 cc. is usually sufficient. Enough water is added to make a total volume of 20 cc. and the solution is mixed and filtered. If a faint opalescence persists, the results will not be affected and the trace of barium present need not be removed for either of the two determinations to follow. Two cubic centimeters of this filtrate is pipetted into a Folin-Wu sugar tube. Two similar tubes are prepared for standards, one of which contains 0.2 mg. of dextrose in 2 cc. and the other 0.4 mg. of dextrose in 2 cc. To each of the three tubes 2 cc. of monose reagent is added and the tubes are heated in boiling water for eight minutes and cooled for two minutes. This reagent consists of a 1 per cent solution of barium hydroxide, to which is added 5 drops of a 1 per cent solution of sodium bisulphite for each 25 cc. of reagent just before it is used. Another set is run with the Benedict alkaline copper reagent simultaneously, with the same amounts of filtrate, standards and reagent, boiling for six minutes and cooling for two minutes. To each of the tubes in both sets 2 cc. of Benedict's color reagent is added and mixed with the contents. The tubes are allowed to stand for two minutes, water is added to the 25 cc. mark, the contents are mixed thoroughly and colorimetric comparisons are made. If the color is too dark, the determination must be

repeated with diluted urine for the copper-barium precipitation. With this procedure the monose method yields dextrose values that correspond closely with values obtained by the Benedict method.

Journal of Industrial Hygiene, Baltimore

15: 117-164 (May) 1933

- Roentgenologic Aspects of Pneumoconiosis and Its Medicolegal Importance. H. K. Pancoast and E. P. Pendergrass, Philadelphia.—p. 117.
Toxicity of Osmium Tetroxide (Osmic Acid). F. R. Brunot, Washington, D. C.—p. 136.
Presence of Lead Dust and Fumes in Air of Streets, Automobile Repair Shops and Industrial Establishments of Large Cities. J. J. Bloomfield and H. S. Isbell, Washington, D. C.—p. 144.
Sulphur Dioxide in Pittsburgh Air. C. Schade, Pittsburgh.—p. 150.
Safety Regulations for Refrigeration Equipment. Y. Henderson and W. V. Batson, New Haven, Conn.—p. 154.
Effect of Viosterol on Excretion of Lead. F. B. Flinn and Adelaide Ross Smith, New York.—p. 156.

Journal of Lab. and Clinical Medicine, St. Louis

18: 765-872 (May) 1933

- Multiple Primary Malignant Neoplasms. H. H. Hurt and A. C. Broders, Rochester, Minn.—p. 765.
Studies of Experimental Muscle Degeneration: IV. Factors of Carbohydrate Metabolism in Muscle Repair. D. K. Fishback and H. R. Fishback, Chicago.—p. 777.
Id.: V. Nitrogen Metabolism of Degenerated Muscle in Acute Injury and Repair. D. K. Fishback and H. R. Fishback, Chicago.—p. 781.
Comparison of Effects of Morphine, Pantopon, Codeine, Narcotine and Papaverine on Respiration of Rats and Rabbits. O. W. Barlow, Cleveland.—p. 785.
Changes in Distribution Ratio of Constituents of Blood and Spinal Fluid in Meningitis. S. J. Kopetzky and Ella H. Fishberg, New York.—p. 796.
*Studies on Antipepsin with New Quantitative Method for Its Determination. A. Slive, Chicago.—p. 801.
Effect of Short Radio Waves on Biologic Activities of Some Bacterial Species. Marion M. Johnston, Toronto, Canada.—p. 806.
Studies on Normal Blood: III. Guinea-Pig. J. L. Brakefield, Birmingham, Ala.—p. 812.
*Colorimetric Determination of Plasma Proteins. Marie Andersch and R. B. Gibson, Iowa City.—p. 816.
Studies in Serology of Syphilis: XII. Modifications in Technic and Interpretation of Wassermann Reaction. H. Eagle, Baltimore.—p. 821.
Method for Studying Activity of Intact Skeletal Muscle. C. E. Leese, Boston, and H. M. Hines, Iowa City.—p. 841.
*Histochemical Method for Detection of Cholesterol. H. W. Larson, New York.—p. 848.
Expression of Hemoglobin Concentrations on Molar Basis. R. D. Barnard, Chicago.—p. 849.
Instrument for Rapid Preparation of Potato Cylinders for Diagnostic Culture Purposes. S. Germain, Denver.—p. 853.
Graphic Method of Determining Certain Numerical Factors in Metabolism. W. Goldfarb, New Haven, Conn.—p. 855.

Studies on Antipepsin.—Slive tested the serums of twelve normal, healthy rabbits for the detection and relative quantitative estimation of antipepsin by the following procedure. It was found that half the animals showed an antipeptic activity of the blood serum and that the other half did not. Rabbits, injected intravenously with pepsin over a period of time, showed the development of an antipeptic activity in the blood serums. This antipeptic activity is due to a real antibody; namely, antipepsin. The liver is the organ with the largest store of antipepsin. The method is as follows: Ten small tubes are set up and to each is added 0.25 cc. of a fresh preparation of 0.7 per cent solution of dried egg albumin; 0.5 cc. of a 2.5 per cent solution of hydrochloric acid; 0.1 cc. of a 0.04 per cent solution of serum; respectively to each tube 2, 1.2, 0.6, 0.24, 0.12, 1, 0.75, 0.3, 0.15 and 0.1 cc. of a 0.0005 per cent stock solution of pepsin in 10 per cent glycerin, and enough water to make 3 cc. The control set up is exactly like the other except that, instead of containing the serum to be tested, it has either the serum of normal, noninjected animals or a quantity of additional solution of albumin the protein content of which is exactly the same as that of the serum being tested. The tubes are placed in an incubator at 37.5 C. In an hour they are removed, and to the contents of each is added 1 cc. of a 4.5 per cent solution of trichloroacetic acid. The undigested protein is immediately precipitated as a white cloud, the intensity of which varies inversely with the degree of peptic digestion of the protein. The measurement of peptic digestion may be done by either visual or chemical methods. In the former, the tubes are held up to the light and the cloudiness in the control is compared to that of the tube which contains the serum in question. Chemical estimations are most accurate and are made by measuring the amount of nonprotein nitrogen in each tube by an

adaptation of the Folin-Farmer method for total nitrogen determinations in the urine. The author also gives a technic for the determination of the antipeptic effect residing in the tissues of the animals that had received injections of pepsin and the effect of glycerin tissue extracts on peptic digestion of albumin, the procedures being similar to the method described.

Colorimetric Determination of Plasma Proteins.—Andersch and Gibson describe a simplification of the Wu colorimetric method for the determination of plasma proteins. They have found that not only a maximum chromogenic value but approximately equal tyrosine equivalents for the plasma proteins are obtained by heating these for half an hour with 10 per cent sodium hydroxide. On the basis of these similar tyrosine equivalents they also offer modifications for the determination of total protein of the plasma and the spinal fluid which give values of sufficient clinical accuracy, irrespective of the protein partition. They present a table that gives a comparison of protein values obtained by this method and values based on nitrogen content.

Histochemical Method for Cholesterol.—Larson outlines a rapid method for the detection of cholesterol in various regions of a section. The reagent used consists of a 25 per cent solution of antimony pentachloride in chloroform, to which a few crystals of antimony trichloride have been added in order to remove any free chlorine. The procedure is as follows: The section is transferred to a slide, blotted three times with filter paper and treated with 1 or 2 drops of the antimony pentachloride reagent. A dark brown color develops instantly whenever the reagent comes in contact with cholesterol or its esters. The excess reagent should be allowed to evaporate. The white powdery substance, which forms sometimes, disappears on blowing the breath over the slide. The section should be washed with 1 or 2 drops of chloroform and mounted in glycerin. Unsaturated fatty acids are stained a light orange and may thus be differentiated from the dark brown of the cholesterol. In thin sections containing only traces of cholesterol, the fumes of antimony pentachloride may be used more satisfactorily than the chloroform reagent. A small glass rod is dipped in the antimony pentachloride and held over the section until the pentachloride fumes have thoroughly penetrated the tissue. This obviates the necessity of using chloroform, which may remove the cholesterol. After the brown cholesterol compound has formed, the section may be washed with 1 or 2 drops of chloroform and the washings removed from the slide by means of filter paper. The brown compound of cholesterol is not readily soluble in chloroform. It does, however, dissolve slowly, yielding a deep purple. If the section is mounted in chloroform, the deep brown slowly takes on a purplish hue and thereby furnishes a further differentiation between cholesterol and unsaturated fats. When mounted in glycerin, a green brown develops. There is no evidence of the color fading, even when the slide is exposed to sunlight for days.

Journal of Nervous and Mental Disease, New York

77:457-560 (May) 1933

- Additional Case of Hemangioblastoma of Retina and Cerebellum, with Note on Lindau's Disease. H. R. Viets, Boston.—p. 457.
Psychogenic Factors and Psychotherapy in Hyperthyroidism and Rapid Heart Imbalance. B. Mittelman, New York.—p. 465.
Familial Myoclonia Occurring in Three Successive Generations. F. G. Lindemulder, Ann Arbor, Mich.—p. 489.
*The Heel Tap, a Pathologic Reflex. S. M. Weingrow, New York.—p. 492.

Heel Tap.—Weingrow presents a new sign that occurs in pyramidal tract disease. The reaction consists of tapping the heel of the foot while the foot is held in a position comfortable to the examiner and the patient. A positive response consists of a fanning and, in many cases, a plantar flexion of the toes. In fact, any movement of the toes following the tapping of the heel should be considered pathologic. The author studied more than 200 normal persons and found no reaction of the toes to the tapping of the heel. Even in psychoneurotic persons with markedly exaggerated tendon reflexes so enhanced that when any part of the foot except the heel was tapped there resulted a plantar flexion of the foot, there wasn't the slightest reaction of the toes to tapping of the heel, but positive reactions of the heel test were found in more than fifty patients present-

ing lesions of the pyramidal tract. The strongest reactions were noted in patients suffering from multiple sclerosis when there was an absence of permanent rigidity of the feet. The heel sign was checked with the Babinski, Oppenheim, Gordon and Chaddock reflexes. It was never present when the Babinski reaction was absent, although the latter was present without the former. The heel tap reaction was present in many persons in whom the Babinski reaction was positive but the Oppenheim, Gordon and Chaddock signs were absent.

Journal of Pediatrics, St. Louis

2:517-640 (May) 1933

- Study of Child Care in First Two Years of Life. Ruth W. Washburn and Marian C. Putnam, New Haven, Conn.—p. 517.
Infant Mortality: Causes of Death During First Year of Life as Determined by Necropsy in Five Hundred and Seventeen Cases. J. B. Gillespie, Rochester, Minn.—p. 537.
*Metabolism of Iron in Anemia of Premature Infants. C. E. Snelling, Toronto, Canada.—p. 546.
Osteomalacia: Report of Case Treated by Large Doses of Viosterol and Quartz Lamp Therapy Without Improvement. G. N. Krost, Chicago.—p. 553.
Sino-Auricular Heart Block in Childhood. G. F. Weinfeld, Ravinia, Ill.—p. 559.
Acute Poliomyelitis: Studies of Streptococci Isolated from Throats and Raw Milk in Relation to One Epidemic. E. C. Rosenow, H. M. Rozendaal and E. T. Thorsness, Rochester, Minn.—p. 568.
Chronic Sialodochoparotitis with Recurrent Subacute Exacerbations. S. Londe and M. D. Pelz, St. Louis.—p. 594.
*Spontaneous Nontuberculous Pyopneumothorax as Complication of Pneumonia in Children. M. B. Gordon and A. S. Manne, Brooklyn.—p. 603.
Ileocecal (Enterogenous) Cyst. C. E. Bradley and C. C. Hoke, Tulsa, Okla.—p. 614.
Mongoloid Idiocy in Negro Infant. J. E. Dunlap, Dallas, Texas.—p. 615.
Antiques of Pediatric Interest. T. G. H. Drake, Toronto, Canada.—p. 617.

Iron-Metabolism in Anemia.—According to the observations of Snelling, the results of studies of iron balance and pigment excretion in a series of seven premature infants tend to establish certain features of this condition and lead to possible explanations of the disorder. Premature infants tend to have a positive iron balance when fed according to the method commonly employed. The pigment excretion is not excessive. The anemia affects the red blood cells and hemoglobin equally, develops in spite of treatment, and improves spontaneously. The anemia appears to be due to a failure to utilize the available supplies rather than to a lack of the substances that compose hemoglobin. An etiologic hypothesis which would explain many of the observed phenomena portrays failure of utilization of the substances that compose hemoglobin due to inadequate medullary space coincident with the premature cessation of hematopoietic activity in the liver.

Spontaneous Nontuberculous Pyopneumothorax.—Gordon and Manne state that spontaneous pyopneumothorax complicating pneumonia in children probably occurs with more frequency than one would infer from the meager literature on the subject. They report four such cases in children ranging in age from 1 to 7 years. All recovered but one who had two recurrences in two years. The classic picture of an acute onset is the exception in this type. It was present in only one of the authors' cases. Pyopneumothorax may elude clinical recognition because of its failure to produce physical signs commensurate with its extent. The most constant and suggestive signs in their cases were diminished or absent breath sounds, with dulness and flatness over an extensive area. The importance of routine fluoroscopic and roentgen examination in the course of pneumonia in infants and children and the careful daily observation of slight changes in the physical signs are stressed.

Kansas Medical Society Journal, Topeka

34:163-202 (May) 1933

- Oil of Wintergreen (Methyl Salicylate) Poisoning: Report of Case. H. L. Dwyer, Kansas City.—p. 166.
Scoliosis in Children. C. B. Francisco, Kansas City.—p. 168.
Some Phases of Congenital Syphilis. C. C. Dennie, Kansas City, Mo.—p. 170.
Infarction of Liver Following Cholecystectomy: Case. R. W. Kerr, Kansas City.—p. 175.
Colloid Carcinoma of Breast: Case Report. C. C. Nesselrode and M. A. Walker, Kansas City.—p. 178.
Tuberculosis of the Spleen Simulating Banti's Disease. M. J. Rumold, Kansas City, and T. G. Orr, Kansas City, Mo.—p. 179.
Speech Defects. E. T. Gibson, Kansas City, Mo.—p. 182.
Early and Late Treatment of Burns. E. C. Padgett, Kansas City, Mo.—p. 184.

Maine Medical Journal, Portland

24: 69-90 (May) 1933

- Embolectomy for Peripheral Embolism: Report of Case. I. M. Webber, Portland.—p. 79.
Cancer Problem in Portland and Vicinity. E. E. O'Donnell, Portland.—p. 82.

Medical Annals of District of Columbia, Washington

2: 99-126 (May) 1933

- Irradiation Treatment of Hyperthyroidism. G. E. Pfahler, Philadelphia.—p. 99.
Etiology of Pernicious Anemia: Review. W. B. Daniels, Washington.—p. 104.
Heart Disease in Washington, D. C.: Study of Etiologic Types and Factors of Race, Age and Sex in One Thousand Two Hundred Cases. L. T. Gager and W. L. Dunn, Washington.—p. 112.
*Cure of Mastoid Fistula with Fat Graft: Report of Case. A. B. Bennett, Washington.—p. 117.

Cure of Mastoid Fistula with Fat Graft.—Bennett treated a mastoid fistula successfully by fat grafts. The edge of the fistula was removed by a circular incision and the periosteum elevated an inch or more posteriorly to permit approximation without tension. The fistula was thoroughly curetted to remove the lining mucous membrane and then a free fat graft from the abdominal wall was introduced, filling the fistula from the antrum to the surface. Anticipating some shrinkage of the graft, this last procedure was slightly overdone. A small rubber dam was placed as a drain along the inferior wall of the fistula and the wound was closed with heavy silk sutures, the skin and periosteum being included in each suture. There was no reaction from the operation and the patient left the hospital on the fourth day. The sutures were removed on the sixth day. There was an accumulation of serosanguineous fluid in the abdominal wound, which, when it was released, was followed by perfect healing. For the following six weeks there was only a slight oily discharge from the postauricular wound. Seven weeks after the fat graft, the wound was dry for the first time and quite depressed in the center. Four months later there was little depression and the patient was discharged as cured.

Medical Journal and Record, New York

137: 353-396 (May 3) 1933

- Health in Relation to Personality. I. S. Wile, New York.—p. 353.
Local Rest in Pulmonary Tuberculosis. C. R. Howson, Los Angeles.—p. 357.
Mechanism of Acidosis in Diabetes and Nephritis. G. Ginsburg, Philadelphia.—p. 360.
Use of Kidney Substance in Nephritis. J. S. Chaffee and H. R. Hansell, Sharon, Conn.—p. 363.
Perinephric Abscess. W. R. Brooksher, Jr., Fort Smith, Ark.—p. 365.
Analysis of Five Hundred Cases of Acute Appendicitis. J. L. Gottesman, Brooklyn.—p. 366.

Nebraska State Medical Journal, Lincoln

18: 161-200 (May) 1933

- Management of Acute Intestinal Obstruction. T. G. Orr, Kansas City, Kan.—p. 163.
Electrocardiography. Review of Five Hundred Cases. M. C. Andersen, Omaha.—p. 166.
Practical Side of Medicine. A. E. Cook, Randolph.—p. 170.
Differential White Blood Cell Count. E. B. Reed, Lincoln.—p. 173.
Some Responsibilities of General Practitioner in Care of Mental Patients. T. M. Barber, Norfolk.—p. 175.
Preliminary Report of Arthritis Section of Department of Public Health of City of Lincoln, Neb. J. E. M. Thomson, Lincoln.—p. 178.
*Match Dermatitis: Report of Unusual Case. D. J. Wilson, Omaha.—p. 183.
Agranulocytic Angina: Case Report. K. C. Baker, Holdrege.—p. 184.
Report of McDowell's First Ovariectomy, Published in Eclectic Repertory in 1810: Three Cases of Extirpation of Diseased Ovaries. E. McDowell, Danville, Ky.—p. 186.

Match Dermatitis.—Wilson reports an unusual case of match dermatitis. Although the patient was in the habit of lighting matches with the nail for years, no trouble developed until a burning portion of the match head lodged under the nail. The eyelids were involved three weeks later. Four months later a patch developed on the left thigh (approximately under the pocket in which matches were carried). Under a soothing preparation, all itching and burning disappeared in forty-eight hours. Only erythema remained about the eyes and on the left thigh. After four days, matches were again carried in the pocket for about twelve hours. Within four hours, itching and burning with acute erythema returned. Soothing preparations were again used for a week and discontinued. There has been no return of the eruption. The

type of eruption produced may range from a mild erythema with slight burning or itching to an acute markedly erythematous patch with oozing. The prognosis is good and the treatment is the avoidance of matches and match boxes and the local use of a soothing preparation.

New England Journal of Medicine, Boston

208: 921-970 (May 4) 1933

- Homo Chirurgicus. H. Cushing, Brookline, Mass.—p. 922.
Medical Supervision of Normal Children Under School Age: Modern Concepts of Its Scope. H. C. Stuart, Boston.—p. 932.
Id.: Present Extent of Its Application. P. Van Ingen, New York.—p. 935.
Child Health Conferences and the Doctor's Bread and Butter. L. W. Hill, Boston.—p. 942.
Important Factors in Treatment of Compound Fractures. P. P. Swett and S. H. McPherson, Hartford, Conn.—p. 946.
Explosibility of Nitrous Oxide-Ether Mixtures. L. F. Sise, Boston.—p. 949.

New Orleans Medical and Surgical Journal

85: 793-878 (May) 1933

- Review of Ninety-Six Cases of Abscess of Liver. H. B. Gessner, New Orleans.—p. 793.
Psychiatric Clinic: Its Function. H. Daspit, New Orleans.—p. 797.
Eyes and Teeth. C. A. Bahn, New Orleans.—p. 800.
Painless Coronary Occlusion. I. I. Lemann, New Orleans.—p. 807.
Place of Electrocardiography in Medicine. W. L. Rosen, New Orleans.—p. 811.
*Importance of Reticulocyte Count in Diagnosis and Treatment of Anemia. F. M. Johns, New Orleans.—p. 814.
Artificial Insemination: Report of Cases. J. Cohen, New Orleans.—p. 817.
Role of Anterior Pituitary Luteinizing Hormone in Threatened Abortion: Preliminary Report. J. T. Witherspoon, New Orleans.—p. 822.

Reticulocyte Count in Anemia.—Johns points out that, in the methods described for staining reticulocytes, the mixture of dye and blood results in a heavy precipitate, which he has been able to obviate by the following method: A full drop of a saturated solution of brilliant cresyl blue is spread over the middle portion of a glass slide and allowed to dry. A small drop of blood is placed on the stain and immediately covered with a cover glass, which is placed so that one corner of the cover glass projects beyond the slide. After one or two minutes, the cover glass is lifted and transferred with a portion of adherent blood to a clean slide. The cover glass is pressed down firmly to produce a thin even layer and an oil immersion lens is used. In counting the large number of cells necessary to determine the percentage of reticulocytes accurately, it is necessary to constrict the field of the microscope.

New York State Journal of Medicine, New York

33: 557-622 (May 1) 1933

- Decline of Medicine as an Art. H. W. Haggard, New Haven, Conn.—p. 557.
Master in the House of Medicine. A. M. Schwitalla, St. Louis.—p. 562.
Roentgen Ray as an Aid in Early Recognition of Serious Disease of the Colon. W. H. Stewart and H. E. Illick, New York.—p. 570.

33: 623-672 (May 15) 1933

- Medical Service for the Nation. E. H. Cary, Dallas, Texas.—p. 623.
Tonsillectomy in Presence of Thyroid Disease. H. G. Bullwinkel, New York.—p. 627.
Further Results Obtained with Rabbit Ovulation Test as Diagnostic Procedure. K. M. Wilson and G. W. Corner, Rochester.—p. 629.
Ringworm of Toes in Students and Dispensary Patients. E. Muskatblit, New York.—p. 632.
Insulin in Hypoglycemia. C. B. F. Gibbs, Rochester.—p. 638.
Arrested Shoulders in Vertex Presentation. M. Hornstein, New York.—p. 639.
Some Neurologic Aspects of Suprarenal Insufficiency. L. H. Cornwall, New York.—p. 642.
*Pustulosis Vacciniformis Acuta (Juliusberg) Followed by Anuria and Tetanic Spasticity: Complicating Disease of Infantile Eczema. H. Feit, New York.—p. 645.
Physical Therapy in Gynecologic Office Practice. Virginia Tannenbaum, Buffalo.—p. 647.
Value of Antitoxin in Treatment of Scarlet Fever. L. A. Kohn and A. I. Josey, Rochester.—p. 651.

Pustulosis Vacciniformis Acuta.—Feit presents a case of pustulosis vacciniformis acuta of Juliusberg terminating in recovery in an infant aged 4 months. The characteristics of the disease were the outbreak of vesicle pustules simulating those of vaccinia and limited chiefly to the exposed areas in a child suffering from infantile eczema. High fever and symptoms of irritation of the central nervous system seem characteristic of this disease. The lesions were distinguished from

impetigo by their vacciniiform character, and from chickenpox, smallpox and vaccinia by their distribution and evolution, by the absence of history of infection, and by the course of the disease. It is possible that the disease is due to some filtrable virus; otherwise one must assume an increased virulence of the staphylococcus or a decreased resistance on the part of the patient. The author treated the lesions by applying boric acid ointment and exposing the child to air. The child seemed to improve until a fresh outbreak of impetiginous lesions appeared on the chest. The temperature during this time varied from normal to 105 F. The ointment was then discontinued and a solution of 3 per cent mercurochrome applied and generalized ultraviolet treatments were begun. In three days the spread of the eruption ceased but two days later the child, who had not voided for thirty hours, developed a spastic retraction of the neck and spasticity of the legs and appeared dehydrated. Infusions were given of 120 cc. of a 5 per cent solution of dextrose intravenously, 150 cc. of physiologic solution of sodium chloride hypodermically, and 0.8 cc. of chloral hydrate by rectum. After six days, after repeated clyses, the temperature became normal and the general condition improved. Two days later the ultraviolet treatment was discontinued. Compresses of potassium permanganate solution 1:6,000 were applied every three hours and the lesions allowed to dry in the intervals. Phenobarbital, 0.015 Gm., was given two times a day when necessary to control restlessness. The eyes were irrigated twice a day with boric acid. Under this regimen the skin continued to improve and the temperature remained normal. Twenty days after medical intervention the crusts had disappeared, the child gained weight, and he was discharged practically cured.

Philippine Islands Med. Association Journal, Manila

13: 191-234 (April) 1933

- Blood Pressure in Aged Filipinos: Preliminary Report. G. T. Lantin, Manila.—p. 191.
Determination of Urea Concentration Factor as Test of Kidney Efficiency in a Puerperal Woman: Preliminary Report. H. Acosta-Sison, F. Barican and J. F. Leiva, Manila.—p. 196.
Certain Adjustments in Health Work in City of Manila Are Required to Attain Maximum Efficiency. T. Corpus, Manila.—p. 198.
Mycozol as Fungicide. C. M. Africa, Manila.—p. 204.
What Is New in Tuberculosis? E. Verano, Manila.—p. 209.

Public Health Reports, Washington, D. C.

48: 499-520 (May 12) 1933

- *Protective Value of Convalescent Serums of São Paulo Exanthematic Typhus Against Virus of Rocky Mountain Spotted Fever. R. R. Parker and G. E. Davis.—p. 501.
Rocky Mountain Spotted Fever and Boutonneuse Fever: Study of Their Immunologic Relationship. L. F. Badger.—p. 507.

Protective Value of Convalescent Serums.—Parker and Davis tested the serums of six laboratory animals that recovered from São Paulo exanthematic typhus for their protective value against the virus of Rocky Mountain spotted fever. Three of these serums afforded complete or essentially complete protection, the fourth a degree of protection nearly as good, while the other two showed definite but less marked protective properties. These results suggest a close relationship between the two viruses.

Radiology, St. Paul

20: 331-416 (May) 1933

- Radiculitis. M. J. Hubeny, Chicago.—p. 331.
*Comparative Value of Serologic and Roentgenologic Diagnoses of Congenital Syphilis. H. B. Podlasky and N. Enzer, Milwaukee.—p. 337.
Roentgenologic Study of Thoracic Aorta. S. Brown, Cincinnati.—p. 343.
Pulmonary Abscess, Bronchiectasis and Pulmonary Neoplasms: Clinical Aspects. E. H. Funk, Philadelphia.—p. 353.
Id.: Roentgenologic Aspect. J. T. Farrell, Jr., Philadelphia.—p. 360.
Id.: Bronchoscopic Aspects. L. H. Clerf, Philadelphia.—p. 365.
Id.: Surgical Aspects. J. B. Flick, Philadelphia.—p. 367.
Thymus: More Recent Findings as to Function and Therapy. L. J. Friedman, New York.—p. 380.
Diagnostic Problems in Consideration of Surgical Lesions of Kidney. I. H. Lockwood and W. Stewart, Kansas City, Mo.—p. 386.

Congenital Syphilis.—Podlasky and Enzer state that serologic examination of mothers and babies at or shortly after delivery should be adopted as a routine procedure. In the presence of positive serologic observations in the mother or the baby, roentgenologic examination of the osseous system of the baby should be made. Positive serologic observations in the mother and the baby, or in the baby alone, should be considered indicative of syphilis until proved otherwise by follow-up

studies. Roentgenologic examination of such infants will establish lesions of the osseous system in a great percentage of cases. Negative roentgenologic observations should not be considered contradictory evidence of the presence of syphilis; they merely indicate the absence of osseous syphilis at birth. Roentgenologic evidence of osseous syphilis may be obtained in the absence of positive serologic observations in the baby. All instances of a positive reaction of the maternal blood and a negative reaction of the blood of the cord serve to emphasize the importance of rechecking the serologic and roentgenologic examinations at intervals of from three to six months. Negative serodiagnosis of the blood of the cord and negative roentgenologic observations in the presence of maternal syphilis are not absolute evidences of the absence of syphilis in the new-born. If they are bilateral, exostoses may be of syphilitic origin.

Rhode Island Medical Journal, Providence

16: 49-64 (April) 1933

- Contraction Ring, Causing Dystocia. F. S. Hale, Providence.—p. 54.

Southwestern Medicine, Phoenix, Ariz.

17: 145-178 (May) 1933

- The Medical Profession's Relation to the Industrial Commission. J. N. Miles, Phoenix, Ariz.—p. 147.
Industrial Surgery in Arizona. R. F. Palmer, Phoenix, Ariz.—p. 148.
Public Health and Medical Cooperation. F. E. Doucette, Phoenix, Ariz.—p. 151.
Diagnosis and Treatment of Carcinoma of the Breast. A. Soiland, Los Angeles.—p. 153.
Problems and Management of Gallbladder Disease. A. P. Kimball, Yuma, Ariz.—p. 156.

Virginia Medical Monthly, Richmond

60: 67-132 (May) 1933

- Etiology and Prevention of Heart Disease. J. E. Wood, Jr., University.—p. 67.
Acute and Subacute Endocarditis. W. B. Martin, Norfolk.—p. 71.
Coronary Disease. G. B. Lawson, Roanoke.—p. 74.
Use of Drugs in Heart Disease. W. B. Porter, Richmond.—p. 78.
Blastomycosis: Report of Three Cases. W. Clarkson and A. Barker, Petersburg.—p. 83.
Varicose Veins and Their Treatment. W. L. Powell, Roanoke.—p. 87.
Certain Features of Etiology of Goiter. J. H. Smith, Richmond.—p. 90.
Vaccine Treatment in Chronic Arthritis. R. M. Hoover, Roanoke.—p. 97.
Delivery Room Management of Occiput Posterior Positions.—R. B. Nicholls, Norfolk.—p. 99.
Fractures Around Elbow Joint in the Hands of the General Practitioner. T. K. McKee, Saltville.—p. 102.
Intra-Ocular Foreign Body: Case Report. J. A. Pilcher, Jr., Roanoke.—p. 103.
Pilonidal Sinus. G. W. Horsley, Richmond.—p. 104.
Multiple Bilateral Primary Lesions with Bilateral Adenopathy in Tularemia. S. D. Blackford, University.—p. 107.
Influence of Pregnancy and Delivery on Physical and Mental Health of Child. H. R. Masters, Richmond.—p. 108.
Use of Concentrated Glucose in Treatment of Acidosis in Children. R. H. DuBose, Roanoke.—p. 110.

West Virginia Medical Journal, Charleston

29: 193-240 (May) 1933

- Peanut Worms and Pellagra: Is the Indian Moth, *Plodia interpunctella*, the Cause of Pellagra? H. P. deForest, New York.—p. 193.
Treatment of Pleural Effusions. G. H. Barksdale, Charleston.—p. 209.
*Use of Sodium Salicylate and Magnesium in Treatment of Rheumatic Fever and Acute Infectious Arthritis. A. N. Foxe, New York.—p. 212.
Argentaffin Tumors of Appendix. M. O. Oates, Durham, N. C.—p. 216.
Binocular Twins: Report of Case. H. G. Steele, Bluefield.—p. 219.

Sodium Salicylate and Magnesium in Treatment of Rheumatic Fever and Arthritis.—The studies of Foxe indicate that doses of 90 grains (6 Gm.) a day of sodium salicylate when combined with 60 grains (4 Gm.) of magnesium oxide give results in acute infectious arthritis and rheumatic fever equivalent to those obtained when doses of 150 grains (10 Gm.) of sodium salicylate, given with 150 grains of sodium bicarbonate, are used. However, this does not necessarily mean that the combined drug (magnecylate) is a grain-for-grain equivalent therapeutically to sodium salicylate. Equivalence or nonequivalence of such effects will only be known when physicians have decided on the minimal effective dose of salicylate. The toxic effect of salicylates, combined with either magnesium oxide or sodium bicarbonate, is minimal. In this study only moderate doses were employed, and cases with cardiac complications were excluded.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 859-904 (May 20) 1933

- New Treatments for Old: Delivered Before the Medical Society of London, May 8, 1933. Horder.—p. 859.
Some Medical Aspects of Boarding School Life. R. Miller.—p. 863.
Modern Views on Mechanism of Gallstone Formation. D. H. Patey.—p. 866.
Etiology and Treatment of Pernicious Anemia. J. A. Gunn.—p. 869.
Crypto-Empyema. A. R. Short.—p. 870.
*Sodium Soneryl as Basal Hypnotic: Report of One Hundred and Fifty Cases. S. E. Birdsall.—p. 871.

Sodium Ethyl Butyl Barbiturate as Basal Hypnotic.—Birdsall used sodium ethyl butyl barbiturate (the free acid is known as neonal) as a basal hypnotic before general anesthesia in 150 patients whose ages varied from 6 to 70 years, on whom operations were performed for diseases of the ear, nose and throat, the abdomen, the urogenital tract, bone, the breast and neck, and for hernia. Sodium ethyl butyl barbiturate was taken orally, in capsules containing 0.15 Gm. each. At first, two capsules (0.3 Gm.) were given at 8 p. m. the day before operation. On the day of operation, sodium ethyl butyl barbiturate was given one hour before the induction of anesthesia, this dose being regulated according to the weight of the patient; for example, patients weighing from 84 to 120 pounds (38 to 55 Kg.) were given 0.45 Gm. of sodium ethyl butyl barbiturate. Doses of 0.45 Gm. were generally found not to produce sleep in adults, and the dosage finally adopted for patients weighing less than 140 pounds was 0.6 Gm., between 140 and 168 pounds (64 and 76 Kg.) 0.75 Gm., and for patients weighing more than 168 pounds 0.9 Gm. Children aged less than 12 years were given 0.3 Gm. of sodium ethyl butyl barbiturate followed by a further dose of 0.15 Gm. if the child was not asleep or drowsy after half an hour. The capsules were given one hour, and $\frac{1}{2}$ grain (0.001 Gm.) of atropine from fifteen to thirty minutes before operation. Ninety-seven of the patients were asleep on reaching the operating room, forty-six were sleepy, in five no definite effect was noted, and two patients were excited. All the patients were breathing naturally, with no trace of cyanosis and no stertor. Sleep was produced in from thirty to forty-five minutes. The induction of anesthesia was smooth, the length of time taken being the same as in nonpremedicated patients. In the majority of instances the amount of ether used was considerably less than would otherwise have been necessary. Recovery from the anesthetic occurred in most cases after two or three hours. After being awake for an hour or two, the patient usually slept for the next six to twelve hours and on waking had no recollection of having been awake previously. The urine was examined on the day following the administration of sodium ethyl butyl barbiturate in order to determine the presence or absence of bile pigments or albumin. In no case was either detected. The author has not administered sodium ethyl barbiturate in cases of senility, pulmonary disease, renal impairment or arteriosclerosis.

Indian Medical Gazette, Calcutta

68: 245-304 (May) 1933

- Some Bypaths of Orthopedic Surgery. W. L. Harnett.—p. 245.
Creeping Eruption Produced by Hookworm Larvae. P. A. Maplestone.—p. 251.
Arneth Count, with Particular Reference to Its Diagnostic Value in Asthma. H. W. Acton and Dharmendra.—p. 257.
Berberine Sulphate in Oriental Sore: Notes. E. W. Hayward.—p. 265.
Account of Epidemic of Cerebrospinal Fever in Borstal Institution. P. D. Chopra and M. S. Chadha.—p. 265.
Spinal Percaine Anesthesia. T. H. Somervell.—p. 270.
Observations on Epidemic of Whooping Cough at the Lawrence Royal Military School, Sanawar: Note on Investigation of Skin Reaction in This Disease. C. F. J. Cropper and J. M. Ram.—p. 271.
**Novostiburea in Treatment of Kala-Azar. S. N. Sur and S. K. Neogi.—p. 273.

Treatment of Kala-Azar.—Sur and Neogi used the sodium salt of urea stibamine (novostiburea) in the treatment of twenty-seven cases of kala-azar. From their observations they draw the following conclusions: 1. The compound can be safely given by both the intravenous and the intramuscular route. 2. The tissue does not become painful after intramuscular injection.

3. The toxicity of the drug is so low that it can be given daily without untoward symptoms. 4. There is a possibility of a daily injection of this drug effecting a much earlier cure. In the twenty patients to whom the drug was given intravenously and was effective in stopping fever, the average number of injections required before the cessation of the fever was 3.6 (in four it took two, and in ten only three injections), whereas in the seven patients treated by the intramuscular route this average was 4.5, and the earliest cessation of fever was reported after three injections in three patients. Of the seventeen patients who completed the full course of treatment, fifteen were discharged as cured, the average number of injections required being nine. In the four adult patients who completed treatment the quantity of this compound required was an average of 2.35 Gm. A marked gain in weight and an improvement in the blood picture was noticed during the course of the treatment. In four of the patients who completed the treatment, the aldehyde and Chopra's stiburea test had become negative; two had been given daily injections.

Irish Journal of Medical Science, Dublin

No. 89: 193-232 (May) 1933

- Practical Problems in Hospital Planning. L. G. Pearson.—p. 193.
Plea for More Realistic Blackboard Drawing. T. T. O'Farrell.—p. 198.
Note on Use of Thorotrast (Hepatosplenoradiography). H. V. Tighe.—p. 203.
Venical Pain. A. A. McConnell.—p. 209.
Clinical Interpretation of Fractures of Neck of Femur. A. Chance.—p. 212.

Journal of Laryngology and Otology, Edinburgh

48: 309-388 (May) 1933

- Ventilation of Nose and Accessory Sinuses: Oscillographic Method of Investigation. J. F. O'Malley.—p. 309.
Note on Tuberculosis of Larynx and Light Treatment. A. J. Cernach.—p. 326.
Statistical Note from Aural Department, St. John's Hospital, Budapest. A. Rejtő.—p. 330.

Journal of Pathology and Bacteriology, Edinburgh

36: 333-492 (May) 1933

- Pathology of Sudden Death: Review of One Hundred and Ninety-Eight Cases "Brought in Dead." T. H. B. Bedford.—p. 333.
Pneumococcal Infections in Infancy and Childhood. J. W. S. Blacklock and Katharine J. Guthrie.—p. 349.
Group of Aberrant Members of Genus *Corynebacterium* Isolated from Human Nasopharynx. M. M. Barratt.—p. 369.
Quantitative Determination of Bacteriophage Activity and Its Application to Study of Twort-Herelle Phenomenon. G. Dreyer and Margaret L. Campbell-Renton.—p. 399.
Development of Agglutinins for Paschen Bodies in Experimental Vacinia, with Illustrative Charts. J. C. G. Ledingham.—p. 425.
Rhinosporidiosis. J. F. D. Shrewsbury.—p. 431.
Hemolysis Produced by Streptococci in Serum Mediums as an Antigen and Its Effect on Antistreptolysin in Vitro. E. W. Todd.—p. 435.
Experimental Arterial Disease Produced by Cholesterol and Vitamin D. C. V. Harrison.—p. 447.
Biology of Fermenting Sarcinae. J. Smit.—p. 455.
*Production of Toxins by *Clostridium Welchii*. L. E. Walbum and C. G. Reymann.—p. 469.

Production of Toxins by *Clostridium Welchii*.—Walbum and Reymann state that ordinary veal broth containing 1 per cent peptone and 0.25 per cent dextrose (*pu* 7.6 to 7.8, liquid petrolatum layer) is a suitable medium for the production of *Clostridium welchii*. The addition of fresh muscle and coagulated meat is superfluous. Calcium carbonate ought to be admixed to neutralize the acids formed, but in order that this neutralization may be sufficiently effective the distribution of the calcium carbonate must be kept up by continuous stirring during the entire growth. Under these experimental conditions the largest quantity of toxin was found after a cultivation period of ten or eleven hours at 37 C. and after from twenty-one to twenty-four hours at 31 C. The minimum lethal dose (in vivo into mice) varied between 0.015 and 0.03 cc. The addition of defibrinated horse blood or of phenanthrenequinone to broth does not cause enhanced toxin production, nor does the cultivation in broth boiled with liver offer any advantages. Whey with peptone gives the same results as ordinary meat broth with peptone. Under the experimental conditions described the nonspecific acute poisonous substance (Wassermann, Kojima) is not formed in measurable quantities in the substrate containing up to 0.75 per cent of dextrose. With a content of 2.25 per cent of dextrose, however, it is produced in considerable quantities. The specific, thermolabile toxin has also an acute killing effect in larger doses (about three to five times

the minimum lethal dose). The toxin is most stable at pH 6. The proteolytic (albumose-splitting) enzyme has its optimal action between pH 7 and 8. The gelatin-melting enzyme has an optimal action at about pH 6, but having passed a minimum of between pH 7 and 8 the action of this enzyme ascends again with rising alkalinity. In view of the investigations made, the theory advanced by Denby and Walbum regarding the production of the bacterial toxins has been applied to *Clostridium welchii* toxin. The antitoxin-binding qualities appear to maintain themselves fairly constant during the growth of the culture, notwithstanding the fact that the curve for the direct action of the poison gradually declines.

Medical Journal of Australia, Sydney

1: 603-636 (May 20) 1933

Varicose Veins and Ulcers: Their Etiology and Treatment. A. L. Dawkins.—p. 603.

Pathology in Its Relation to Diagnosis and Treatment of Cancer in Cancer Clinic, Adelaide Hospital. L. B. Bull and B. S. Hanson.—p. 609.

Diabetes and Eye Disease. G. H. Hogg.—p. 615.

1: 637-668 (May 27) 1933

Nasal Sinusitis in Relation to General Infection. C. M. Eadie.—p. 637. Calcium Therapy in Treatment of Allergies and Its Use in the Form of "Afenil." I. Maxwell and D. Zacharin.—p. 642.

*New Intradermal Reaction in Ancylostomiasis. A. B. Vattuone.—p. 645. Anthrax in East Africa. R. M. Buntine.—p. 647.

Combined Radiation Treatment in Pelvic Cancer. H. M. Moran.—p. 647.

Intradermal Reaction in Ancylostomiasis.—Vattuone describes a new intradermal reaction in ancylostomiasis, performed in the following manner: A drop of the antigen is injected into the derma on the medial aspect of the forearm of each patient. About 6 cm. from this first puncture a second injection, that of the control, is made. From fifteen to thirty minutes after the injection, the antigen gradually forms a clear whitish blister, surrounded by a hyperemic circle about 2 cm. in diameter, with an irregular dusky margin. The control shows the blister much less distinctly, being not as white and the ring being only about 1.2 cm. in diameter and paler than the surrounding skin. Patients more severely affected with the parasites gave a much more intense intradermal reaction as compared with carriers, while the latter still gave a decided, although less intense, reaction. The maximum effect was noted from thirty to forty minutes after injection, before it slowly disappeared. The effect of the antigen on persons free from injection with this parasite was negative. To obtain the antigen the author collected the feces of a few patients affected with the disease and showing numerous eggs of the parasite, on microscopic examination after a two day diet consisting of milk and after energetic treatment with thymol. The antigen was prepared from the ancylostomas, some males but the majority females, and collected into small sterilized glass tubes sealed by flame. Other phials containing physiologic solution of sodium chloride were sealed in a similar way as controls.

South African Medical Journal, Cape Town

7: 317-352 (May 27) 1933

Some Factors in Heart Disease. E. E. Wood.—p. 319.

Etiology of Primary Bronchial Carcinoma. A. M. Moll.—p. 323.

Enterostomy in Acute Obstruction. M. A. Lautré.—p. 326.

Practical Points in Treatment of Ear, Nose and Throat Diseases. C. E. Jones-Phillipson.—p. 329.

*Some Considerations on Atebrin as an Active Antimalarial Measure. P. N. H. Labuschagne.—p. 332.

Antimalarial Treatment.—Labuschagne states that out of the legion of drugs on the market that are supposed to cure malaria only three should be considered: quinine, plasmochin simplex and an amino-acridine derivative (atebrin). The triumphs and failures of quinine are well known. One feature, however, is undeniable: that quinine does not in a great number of cases have a permanent lethal effect on the parasite, and this alone is sufficient to rule it out of any blood-sterilizing campaign. With the advent of plasmochin simplex, greater possibilities seemed to present themselves. The author has been unable to confirm the observations that plasmochin simplex materially assists the action of quinine on the asexual parasite. He concludes that the cycle of infection must be broken in another way, i. e., by complete eradication of the parasite, and the only drug at present that seems to hold out any hope in this direction is this amino-acridine derivative.

Presse Médicale, Paris

41: 1201-1216 (July 29) 1933

*Sarcoma of Pancreas. H. Mondor, Paulette Gauthier-Villars and A. Sicard.—p. 1201.

Pure Sulphurated Oil Extracted from Bituminous Rocks in Jura Used in Minor Surgery, Gynecology and External Diseases. J. le Calvé.—p. 1205.

Sarcoma of Pancreas.—Mondor and his associates discuss the symptomatology and diagnosis of primary fibrosarcomas of the pancreas on the basis of eighteen cases found in the literature and of one personal observation. The symptomatology of sarcoma of the pancreas closely resembles that of a benign pancreatic cyst. Its exterior walls are usually smooth and regular as those of a cyst but they may be irregular. It is usually of cystic structure containing a hematic fluid; rarely it is solid. Its interior may be smooth like a cyst or filled with irregular vegetative masses. Microscopically, it is characterized by a fusocellular proliferation of connective tissue originating in the frame of the gland or its capsule or in the fibrous wall of a preexisting cyst. The adjacent glandular tissue is normal. The subjective symptoms vary with the location. There is usually intense paroxysmal epigastric pain, especially severe several hours after eating. Ascites is frequent and abundant. Icterus and signs of pancreatic insufficiency are rare. Loss of weight is rapid and severe. Roentgenography is valuable in the diagnosis and localization of tumors of the pancreas. If the tumor is located at the head of the pancreas, characteristic duodenal deformations may appear, such as enlargement of the duodenal outline, changes of the duodenal bulb, which is pushed upward and to the left and fills poorly, indistinct appearance of the folds of the mucosa, and a decrease of peristalsis shown by stasis of the barium in the stomach and duodenum. If the body of the pancreas is involved, the tumor is usually more voluminous and the roentgenographic deformations affect the stomach and the colon. If the tumor infiltrates across the lesser omentum, it pushes the stomach down and toward the left; if it is between the stomach and the colon, both these organs are displaced downward. In the presence of a supposed cyst of the pancreas rapidly increasing in size, more painful than normal, accompanied by ascites and having a cachectic evolution, sarcoma should be suspected and laparotomy is indicated. If the interior wall of the sac is smooth, histologic examination is required for diagnosis. Total extirpation is dangerous because of the size of the tumor and its adhesions. The late results were poor even in the most favorable case and the late results of marsupialization, performed in a few cases, were no better.

Annali Italiani di Chirurgia, Naples

12: 709-852 (June 30) 1933

Tuberculosis of Pancreas. M. Canavero.—p. 709.

*Chloruremia in Burns. A. G. Chiariello.—p. 737.

Contribution to Study of Rhabdomyoma. E. Santi.—p. 745. Postoperative Bronchopulmonary Complications in Relation to Anesthesia. G. Pelliccia.—p. 760.

*Bacteriophage in Ambulatory Treatment of Localized Inflamed Lesions. R. Galli.—p. 783.

Hemangioblastoma of Tongue. G. Figurelli.—p. 811.

Chloruremia in Burns.—From experiments with burns produced by the thermocautery in dogs and from determinations made according to Bang's micromethod, Chiariello demonstrated that there is a diminution of the chloride content of the blood, almost always proportional to the size and degree of the burn. The author states that an improvement resulting from treatment with intravenous injections of hypertonic solutions of sodium chloride must be interpreted not as the effect of an antitoxic action or of a replacement of the chlorides but as the effect of the diuresis caused by such solutions and the consequent elimination of toxic products.

Bacteriophage in Treatment of Inflamed Lesions.—Galli cites the results obtained by the use of bacteriophage in the treatment of various forms of pyogenic infections. Of forty-five cases treated, 86.6 per cent showed favorable results. As the contents of the inflammatory lesion become liquefied, the author aspirates them with a small trocar or a large needle, introduced laterally through the healthy skin. This obviates the need of a surgical incision leading to a disfiguring scar and avoids the formation of a fistula. The rapid and complete liquefaction of the necrotic tissues facilitates their elimination. After instillation of bacteriophage, the severe painful tension

suddenly disappears and thermic reactions are temporary. Bacteriophage therapy is otherwise innocuous and painless. Better results are obtained in treating infections of recent date. Chronic suppurations of long standing are usually more resistant to bacteriophage.

Policlinico, Rome

40: 1201-1240 (July 31) 1933. Practical Section

Primary Carcinoma of Pancreas: Case. L. Preti.—p. 1201.
Atebrin in Treatment of Malaria. G. Marotta and U. Peratoner.—p. 1205.

*Clinical Note on Alcohol Therapy in Pulmonary Diseases. F. Calvi.—p. 1207.

Esophageal Syphilis: Case. V. Ponzoni.—p. 1209.

Primary Infantile Atrophy and Insulin Therapy. A. Belardinelli.—p. 1226.

Alcohol Therapy in Pulmonary Diseases.—Calvi presents the theory that alcohol, retained by the cells of the reticulo-endothelial system of the lung, acts locally on the cause of the infection, diminishing the activity and virulence of the micro-organisms and stimulating the active production of antibodies by the endothelial tissue. The author slowly administered ethyl alcohol intravenously in daily doses of from 20 to 50 cc. to forty-seven patients, ten of whom had pulmonary tuberculosis and acute nontuberculous bronchopneumonic complications, fifteen specific pulmonary diseases and subsequent bronchopneumonic complications and hemoptysis, six fibrous tuberculosis, bronchiectasis and chronic suppurations, and eight nonspecific bronchiectatic forms in the acute stage; eight were nontuberculous patients with pneumonia and influenzal bronchopneumonia. The treatment was well tolerated. Obliteration of the vein after intravenous injection did not occur in any case. The renal, circulatory and hepatic conditions were in no way affected. In chronic tuberculous forms, if the alcohol did not modify the pathologic course it aided sometimes in the reactivation, either hastening the regression of congestive factors or exerting its action on the associated bacterial flora. In common influenzal infections with bronchopneumonic complications, the effect of the alcohol on resolution was notable.

Dermatologische Wochenschrift, Leipzig

97: 1099-1126 (July 22) 1933

*Dermatolysis (Loose Skin), with Especial Consideration of Its Pathogenesis and Relations to Dermatitis Atrophicans Progressiva. H. Fuhs.—p. 1099.

Experiences with an Acridine Dye in Psoriasis and Erysipelas. C. C. Hoffmann and L. Vargas.—p. 1108.

Dermatolysis (Loose Skin) and Its Relation to Progressive Atrophy of Skin.—Fuhs states that it is wrong to identify the cutis laxa sive hyperelastica (rubber skin) with dermatolysis. The so-called rubber skin is occasionally hereditary, and the skin, without hanging loose, has an extraordinary elasticity. Such persons are sometimes able to pull the skin of the neck or of the forehead over the nose, and the skin of the back in a high fold. With this elasticity there occasionally occurs a hyperextensibility of the joints (rubber man). Histologic examination reveals no great discrepancy from the normal skin, except that in some cases myxomatous degeneration of the collagenic connective tissue has been noted. Dermatolysis, however, is a disorder characterized by an abnormal looseness of the skin, which in turn results in the formation of large folds on various parts of the body. These folds may occasionally form sac-like hanging pads, which, after stretching, do not return to their original position because of their laxity and inelasticity. The author describes five cases of dermatolysis. In four of these cases the dermatolysis concurred with diffuse progressive atrophy of the skin, and from this it appears possible that dermatolysis has the same pathogenesis as progressive atrophy; namely, a congenital deficiency in the resistance of the elastic tissues toward various external and internal injuries (infections, endocrine disturbances, nervous influences, colds and so on). The author thinks that the simultaneous occurrence and the similar histologic aspects of the two conditions make it appear probable that dermatolysis is perhaps an advanced stage of progressive atrophy. However, because his material is rather small, and also because some reports in the literature differ from his observations, he considers it advisable to adhere for the present to the theory that considers dermatolysis an independent disease entity.

Dermatologische Zeitschrift, Berlin

67: 1-128 (July) 1933

Extensive Multiple Lupoid or Leproid Granulomas of Skin. R. Stempel.—p. 1.

Scleropoikiloderma. P. Keller.—p. 14.

Hemorrhage and Blood Impairment After Arsphenamine. S. Emanuel.—p. 24.

*Investigations on Pathogenesis of Bakers' Eczema. N. Van Vonno and J. Struycken.—p. 43.

Bakers' Eczema.—Van Vonno and Struycken point out that, in spite of a decreased consumption of flour and bread, bakers' eczema is increasing. They think that this incongruence can be explained by the increase in allergic disorders. Because some investigators have ascribed the recent increase in bakers' eczema to the substances that are added to the flour to make it more suitable for baking, they made tests on bakers with and without eczema and on control persons. In experiments with various types of wheat, rye and rice flours, they gained the impression that one of the main causes of the predisposition to eczema must exist in wheat flour. They made tests with various substances that are added to the flour to make it more suitable, but they reached the conclusion that these substances, particularly ammonium persulphate, are not responsible. In discussing the treatment, they point out that some advise a change of occupation for bakers who are subject to eczema; but since this is not always possible, they recommend tests to determine to what type of flour the patient is susceptible, and, after the eczema has been cured, desensitization treatment. They call attention to errors and wrong conclusions in the studies of the investigators who considered the addition of ammonium persulphate as the main cause of bakers' eczema and they point out that bakers' eczema was known long before this substance or any other was ever added to the flour and that consequently it is unnecessary to prohibit the use of these substances.

Deutsche medizinische Wochenschrift, Leipzig

59: 1029-1068 (July 7) 1933

Beginning of Psychoses. K. Schneider.—p. 1029.

Circulation and Nervous System. F. Kauffmann.—p. 1034.

*In What Case Can Kahn Reaction Replace Wassermann Reaction? Annemarie Köhler.—p. 1036.

Cholelithiasis and Gastric and Duodenal Ulcer in Diseases of Spinal Cord. H. Wantoch.—p. 1038.

Directions for Air Filling of Cerebrospinal Fluid Spaces for Purpose of Roentgenologic Visualization. G. Schaltenbrand.—p. 1039.

*Eye Disorders Caused by Dyeing of Eyelashes. W. Bab.—p. 1041.

Therapeutic Use of Absinth (Artemisia Absinthium). R. F. Weiss.—p. 1042.

Incidence of Night Blindness (Hemeralopia) in Men and Women. G. Joachimoglu and G. Logaras.—p. 1043.

Malignant Bone Tumors. M. Krabbel.—p. 1044.

Progressive Neural Muscular Atrophy with Peculiar Etiology and Symptomatology: Case. B. Beyermann.—p. 1046.

Transcutaneous Therapy. C. Gleichmann.—p. 1047.

Extent of Exemption from Transaction Tax of Medical Activities. Hoeres.—p. 1048.

Vitamins as Oxidation Catalysts. C. Oppenheimer.—p. 1049.

Kahn Reaction or Wassermann Reaction?—Köhler reaches the conclusion that in routine examinations made primarily on old syphilis cases the rather expensive Wassermann test can be replaced by the Kahn test. However, if the Kahn test gives a positive reaction, a control Wassermann test has to be made before the serologic diagnosis can be considered reliable, because nonspecific fluctuations toward the positive side are quite frequent in the Kahn test. For the same reason a positive Kahn test cannot serve as the only criterion in beginning serorelapses. A positive Kahn reaction in case of a negative Wassermann reaction makes a more frequent control necessary. The Kahn test is unsuitable for purposes of dosimetry, for whereas the positivity of the Wassermann reaction diminishes in the course of effective treatment and thus indicates the efficacy of the treatment, the Kahn reaction is often unusually weak or gives sudden positive fluctuations.

Eye Disorders Caused by Dyeing of Eyelashes.—Bab asserts that the ophthalmologist is frequently consulted for acute and chronic irritations of the eyes, which can be traced to cosmetic procedures. Although the connection is not always evident, it often happens that in doubtful cases, in which the use of the cosmetics is discontinued, the irritation disappears. The author asserts that this applies to all types of cosmetics, to dyes, to the application of india ink and to eyebrow pencils, but he calls especial attention to the fact that even henna

dyes that are generally considered harmless as hair dyes may cause serious complications when applied to the eyelashes and eyebrows. He reports the histories of six patients in whom the dyeing of eyelashes and eyebrows with henna was followed by severe conjunctivitis, edema of the lids, blepharospasm, watering of the eyes, painfulness and, in some, even by the development of sties, marginal keratitis, erosions and ulcerations of the cornea and eczema of the brows. These symptoms never develop immediately but only after from twelve to twenty-four hours. The case reports indicate that the milder cases may heal in about twelve days, but the severer disorders persist for from five to more than nine weeks. Therapeutic measures are of little avail. Administration of analgesics and soporifics to counteract the pain and the insomnia is about all that can be done. The author thinks that these disorders are caused by a hypersensitivity to henna, but this is not found out until it is too late, and he considers it inadvisable to approve as harmless a substance that may cause such grave disorders.

Jahrbuch für Kinderheilkunde, Berlin

140: 1-124 (July) 1933

- Osteogenesis Imperfecta. K. Haszmann and A. Verdino.—p. 1.
- Mechanism of Bottle Nursing. G. O. Harnapp.—p. 31.
- *Intermittent Fever in Children. H. Kleinschmidt.—p. 40.
- Studies on Various Cutaneous Phenomena Occurring in Scarlet Fever. A. Ströe and I. Bazgan.—p. 53.
- *New Form of Dystrophy in Congenital Syphilis (Asymmetry of Fingers). V. Mikulowski.—p. 91.
- *Primary Tuberculous Focus Following Intramuscular Injection of Milk in New-Born Infants. A. C. Szampan.—p. 101.

Intermittent Fever in Children.—Kleinschmidt differentiates three types of intermittent fever: the intermittence on a small scale, the transitory type and the classic intermittent fever. Intermittence on a small scale he observed in a certain type of children whose disorders were generally diagnosed as psychosis, neurosis, unstable disposition or hysteria. He thinks that in these children the intermittent fever can be explained by a physiologically increased metabolism and by a lability of the center of temperature control. In the children with the transitory type of intermittent fever there were noted subacute tuberculosis, furunculosis, incretory and growth disturbances and neuritis, but they also showed nervousness and anxiety, and it is probable that these symptoms were the determining factors in the development of the intermittent type of fever. Regarding the classic form of intermittent fever, the author states that only those cases in which for several days in succession the temperature goes below 37 C. (98.6 F.) and above 39 C. (102.2 F.) can be considered belonging to this group. This type of fever was observed in tuberculous spondylitis, tuberculosis of the mesenteric lymph nodes, otitis media, bronchopneumonia and lobar pneumonia with pleural involvement, but there were also children in whom the intermittent fever could not be traced to a somatic disturbance but in whom certain neurotic symptoms were present. The author concludes that the intermittent fever is not bound up with certain diseases but that it is the result of a constitutional disturbance of the center of temperature control. Fever impulses are brought to the center from the changed metabolism or directly by toxins perhaps together with influences from other centers of the cerebral cortex. But these impulses are not sufficient to produce the intermittent fever. The most important factor is the mode of reaction of the center, which is determined by the constitution, and the essential component of the neuropathic constitution seems to be the psychic lability. The author found that most of these children were underweight and lived in an undesirable environment. The treatment should be mainly expectant, or a mild shock therapy can be tried. In some instances the fever disappears without any intervention whatever, but the cessation of the fever is not sufficient, and physical therapy, a suitable diet and particularly psychotherapy are advisable to get such children properly adjusted.

Dystrophy in Congenital Syphilis.—Mikulowski discusses the various deformities that are found in congenital syphilis. In watching for deformities of the hands, his attention was drawn to an asymmetry of the fingers. He reports a number of cases in which he observed this asymmetry, and he shows a photograph of the hands of one patient in whom the fourth finger of the right hand was 2 cm. longer than that of the left hand. He observed fifty cases of asymmetry of the fingers

and demonstrated congenital syphilis in forty, or 80 per cent. From this high percentage of concurrence he concludes that asymmetry of the fingers has considerable diagnostic significance.

Tuberculous Focus Developing After Injection of Milk.—Szampan reports the histories of two nurslings, who, on account of ophthalmoblennorrhoea neonatorum were given an intramuscular injection of milk. The milk had been brought to the boiling point, but in both nurslings a slowly growing abscess developed at the site of injection on the thigh and had to be incised. The regional inguinal lymph glands became swollen and remained enlarged for a considerable period. In one of the children, tubercle bacilli of the bovine type were grown on culture from the abscess material. In the second case this was not possible. The Pirquet test gave positive reactions quite early in both infants, and there were no signs of tuberculous changes in any other part of their bodies. The tuberculous abscess took a comparatively favorable course and finally healed completely. From three to four years after the development of the abscess, both children are quite well. After discussing various possibilities of pathogenesis, the author reaches the conclusion that the tubercle bacilli were most likely injected with the milk, and, since the efficacy of the milk injection is reduced by prolonged boiling (the protein bodies become denatured), he emphasizes the necessity of making sure that the milk comes from cows that are known to be free from tuberculosis.

Zeitschrift für klinische Medizin, Berlin

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- Oxygen Therapy in Patients with Cardiac and Pulmonary Disease. H. W. Knipping and G. Zimmermann.—p. 435.
- *Multiple Myeloma and Hypoproteinemia. W. Chester.—p. 466.
- *Sprue-like or Pellagroid Disease. C. Froboese and E. Thoma.—p. 478.
- Physiologic Decomposition of Blood Pigment. R. Nothhaas.—p. 490.
- *Qualitative Changes in Hemogram During Jaundice. N. Klein and S. Szentmihályi.—p. 497.
- Investigations on Pressure in Upper Portion of Stomach. O. Schiersmann.—p. 506.
- Humoral (Colloidal) Conditions as Constitutional Signs. H. Storz and H. Schlunghaus.—p. 517.
- Tuberculous Splenomegaly Combined with Cirrhosis of Liver. G. Hässelbarth.—p. 525.
- Congenital Malformation of Urogenital Apparatus: Treatment of Uremia. R. Enger.—p. 532.
- Irritated Stomach: Function and Pathology of Gastric Mucous Membrane. K. Westphal and W. Kuckuck.—p. 537.

Multiple Myeloma and Hypoproteinemia.—Chester mentions three factors that may lead to hypoproteinemia: loss of protein through the kidneys, deficient nutrition and decomposition of body protein as the result of infections. Because he could not understand why most investigators detected increased serum protein values in patients with multiple myeloma in spite of the presence of all factors that cause a reduction in serum protein (albuminuria, Bence-Jones protein and emaciation), he decided to study the serum protein in multiple myeloma. In two patients with multiple myeloma he noticed a decrease in the serum protein, but following a protein diet it increased rapidly. In the first patient there existed, in addition to amyloid deposits in the bone system, myelomatoid infiltrations of the lungs. The author stresses that there is a similarity between the clinical aspects of nephrosis and the malnutrition occurring with multiple myeloma. For this reason, precaution is necessary in the diagnosis of nephrosis in multiple myeloma. In patients with multiple myeloma, nephrotic degeneration should be thought of only in the presence of azotemia, limited concentration capacity of the kidney, solid deposits, protein and Bence-Jones protein in the urine, and in the absence of increased blood pressure and of changes in the fundus of the eye. Hypoproteinemia does not indicate nephrosis in cases of multiple myeloma, for it is only a sign of the malnutrition that is noticeable in all cachectic conditions.

Sprue-like or Pellagroid Disease.—Froboese and Thoma call attention to the fact that in recent years it has been repeatedly pointed out that there is a certain parallelism between sprue and pellagra. This comparison was occasioned by the fact that in some cases the symptoms were only partly present, which made a definite classification difficult. Such cases have often been referred to as pellagroid or sprue-like disturbances. The authors describe a case in which it was difficult to decide whether it should be considered as sprue or as pellagra. The clinical aspects and the course favored sprue, for all the char-

acteristic symptoms of sprue were present. However, the anomalies in pigmentation and the inflammatory dermatoses do not belong to the aspects of sprue but favored pellagra, as did also the histologic aspects. The authors reach the conclusion that the described case presents an intermediate condition between pellagra and sprue. They advise that changes in the glands of internal secretion, particularly of the suprarenals, should be watched for in both sprue and pellagra. The patient whose case is reported presented changes in the suprarenals. This aspect is important, because changes in the suprarenals have been observed in other cases of pellagra, and it has been assumed that the cutaneous pigmentations in pellagra may be related to suprarenal impairment.

Qualitative Changes in Hemogram During Jaundice.—Klein and Szentmihályi studied approximately 420 hemograms of forty patients with jaundice. On the basis of their observations they reach the following conclusions: 1. Jaundice caused only by obstruction and the mild parenchymatous (catarrhal) forms of jaundice are characterized by lymphomonocytosis. 2. The increase or the decrease in monocytes indicates the condition of the hepatic parenchyma (reticular system). 3. In conditions with severe destruction of the parenchyma, the blood picture has considerable differential diagnostic value, because in these conditions (carcinoma and atrophy) there occurs, corresponding to their severity, eosinolymphopenia, as well as absolute or relative monocytopenia, and the neutrophil cells generally show a deviation to the left.

Zentralblatt für Gynäkologie, Leipzig

57: 1569-1632 (July 8) 1933

*Quinine and Hypophyseal Extract in Treatment of Febrile Abortion. K. Habbe.—p. 1570.

Investigations on Equivalence of Urinary Substances Designated as Hormone of Anterior Hypophysis and of Similar Acting Substances from Hypophysis. A. Mahner.—p. 1572.

*Biologic Hyperemization of Inflammations of Adnexa with Hormones of Anterior Lobe of Hypophysis. K. Hübscher.—p. 1575.
Do Chorionic Cells Produce Hormone of Anterior Lobe of Hypophysis During First Weeks of Pregnancy? G. Maroudis.—p. 1580.
Determination of Ovarian Hormone in Urine. J. Pazourek.—p. 1582.
Eclampticiform Convulsions During and After Birth Resulting from Suppurating Meningitis. H. Kretzschmar.—p. 1584.
Attempt to Induce Abortion by Means of Soap Solution During Ninth Month of Pregnancy. J. Beaufays.—p. 1592.

Quinine and Hypophyseal Extract in Febrile Abortion.—Habbe reports observations on eighty-nine cases of febrile abortion, in which fetus and placenta had not been expelled. In forty-four of these cases the pregnancy had progressed less than three months and in forty-five it was between the third and sixth months. In a considerable number of these cases the uterine contractions were adequate, so that medication did not become necessary. However, in twenty-seven women of the first group and in thirty-nine of the second group the uterine contractions had to be stimulated by administration of quinine and of hypophyseal extract. The author advises that quinine should not be given in excess of 1 Gm. This quantity should be administered in the course of two hours in single doses of 0.25 Gm. each. Beginning with the second dose of quinine, hypophyseal extract is added. The author's aim in uncomplicated febrile abortion is to effect dilatation of the cervix and expulsion of the fetus by the natural forces and, if necessary, to stimulate and further them by medicaments. Then follows curettage with a dull instrument. Tamponade of the uterus is avoided as much as possible. The author thinks that, since febrile abortion occasionally involves great difficulties, it is advisable to hospitalize all such cases.

Hyperemization of Adnexa by Hormones of Anterior Hypophysis.—Hübscher resorted to the hormones of the anterior hypophysis in the treatment of inflammatory disorders of the female genitalia in twenty-five cases. Of ten cases in which prolan was employed, one showed improvement, others remained unchanged and in three cases an enlargement of the tumor was noticeable. Ten patients were treated with another hypophyseal extract and improvement became noticeable in three, but the author thinks that these improvements may be accidental. Of the five patients who were treated with urine from pregnant women, four showed improvement. A number of the cases that did not yield to the hormone treatments were later improved or cured by protein therapy, hot air treatments or diathermy. Thus the hormone treatment alone did not produce

favorable results, but the author thinks that in combination with other methods, particularly with diathermy, it may eventually prove helpful. However, since the mode of action of prolan is not completely understood as yet and since it may even be harmful by accelerating tumor growth, great precaution is necessary if it is to be used in inflammatory disorders of the adnexa.

Norsk Magasin for Lægevidenskapen, Oslo

94: 713-824 (July) 1933

Spontaneous Pneumothorax. A. Tuxen.—p. 713.

Photography of Bacteria Colonies with Light Passing Through Colonies. T. Thjøtta.—p. 731.

*Intoxication with Calcium Cyanamide: Case. L. L. Linneberg.—p. 734.
Scurvy in Patient with Hemolytic Jaundice: Case. L. L. Linneberg.—p. 736.

Rat Bite Fever: Case. I. Schjøth-Iversen.—p. 739.

*Cerebral Osteochondroma Originating in Falx Cerebri. F. Platou.—p. 743.

Indications for Operative Interventions in Throat and Ears in Children and Their Significance. R. Moe.—p. 747.

*Radium Treatment of Abdominal Actinomycosis. R. B. Engelstad.—p. 759.

*Abortin Reaction in Undulant Fever. G. Gulowsen.—p. 764.

*Frequency of Cancer in the Insane. R. Opsahl.—p. 771.

Angioneurotic Symptom Complex During Arspenamine Treatment. H. C. Gjessing.—p. 791.

Intoxication with Calcium Cyanamide.—Linneberg states that the intoxication in his patient developed during three days' work at emptying and filling sacks with a fertilizer, calcium cyanamide, and was marked by increasing headache with dyspnea, followed by a burning sensation in the throat and trachea. The breath smelled of almonds. The skin of the face, neck and hands was swollen and red with a bluish tint. Treatment consisted of injections of sodium thiosulphate. Headache with insomnia persisted after five months. Workers with this material should be protected by face masks.

Cerebral Osteochondroma Originating in Falx Cerebri.—In Platou's patient there was insomnia three or four years earlier, followed by diffuse headaches with occasional violent attacks, diplopia of several minutes' duration four or five times and, finally, protrusion of the left eyeball with slight nystagmus and choked disk in the right eye and beginning choked disk in the left eye. Roentgen examination indicated a tumor in or between the frontal lobes. Excision of the tumor, which required five hours, was done under local anesthesia. The tumor, of almost the size of a goose egg, was microscopically established as an osteochondroma. It originated from the inside of the dura at the transition to the falx, had no connection with the cranium and is thought to be due to a fetal factor. The patient continues well after three years. The only two cases of intracranial osteochondroma reported in the literature are cited.

Radium Treatment of Abdominal Actinomycosis.—Engelstad's patient with abdominal actinomycosis in the ileocecal region was successfully treated with radium and was without symptoms six months after the conclusion of the treatment. The entire affected region was covered with a prosthesis 16 by 16 cm. with 152 mg. of radium element, a radium-skin distance of 3 cm. being used; the length of treatment was ten days and the total dosage 60 Dominici. The unsatisfactory results of radium treatment of abdominal actinomycosis previously reported are ascribed at least largely to the technic, and protracted fractional irradiation with hard, strongly filtered rays (Coutard's method) is recommended.

Abortin Reaction in Undulant Fever.—Gulowsen finds this reaction persistent and thus suitable for retrospective diagnosis and says that the certainty, specificity and simplicity of the test together with the keeping quality of the abortin make the abortin reaction valuable in the diagnosis of undulant fever.

Frequency of Cancer in the Insane.—Opsahl's investigations seem to show that the previously assumed difference between the frequency of cancer in the insane and in the normal population is only apparent. He says that the seemingly low death rate from cancer in the insane, especially in those with schizophrenia, is probably to be explained by the higher death rate from other causes, especially tuberculosis, among the insane, and he sees no real difference in the death rate from cancer between schizophrenia and other forms of insanity. Like other investigators, he finds that cancer is frequently the immediate cause of the psychosis.

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THE RÔLE OF THE RADIOLOGIST IN THE TREATMENT OF CANCER

CHAIRMAN'S ADDRESS

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PITTSBURGH

Probably no subject in the history of medicine has been given such intensive investigation and research as has the study of cancer during the last two decades. The creation of cancer foundations, clinics, institutes, societies for the study and control of cancer, publications devoted exclusively to the subject of cancer and wide propaganda for the education of the public are without parallel in our generation.

The results of such vast and varied activities are naturally intricate and so comprehensive that they cannot be grasped by an individual mind. It will probably remain for another generation to digest fully the enormous volume of facts, theories and experiments now accumulating in research laboratories and to evolve new truths about the origin and treatment of cancer.

One of the features of this intensive effort has been the increasing importance attached to radiation therapy in cancer. One has only to refer to the literature of twenty years ago and compare it with that of today to be impressed with the total change in attitude.

It is true that the therapeutic effect of x-rays was a very early observation, and no later than 1900 it was known that epithelioma of the skin could be cured by their application.

The technic of this treatment was promptly and efficiently developed. It was hampered somewhat by primitive apparatus and more particularly by the limitations of the x-ray tubes then available. However, by the time Dr. Coolidge had perfected his tube in 1913, the x-ray treatment of malignant conditions of the skin was accepted as a superior method and, with the advantages of accurate dosage and unlimited quantity of radiation which became available with the Coolidge tube and improved apparatus, all other methods of treatment have been practically abandoned. This point has naturally been reached gradually as skill in the application of radiation has increased with experience.

The scope of the method was broadened by the introduction of radium as a therapeutic agent when lesions in the cavities of the body were added to the list of those which could be successfully treated.

Before this time, cancer of the mouth came entirely within the domain of the surgeon. However, the

results from operation on intra-oral carcinoma were never very satisfactory. Efforts to treat these lesions by x-rays had proved entirely unsuccessful because of the technical difficulties incident to the application of an effective dose. When radium came into use about twenty years ago it was hopefully accepted as an ideal treatment for this otherwise discouraging class of cases. Although progress was slow, owing to a lack of knowledge of a proper technic, experience in dosage and methods of application and especially in the use of interstitial radiation and of filtration producing higher percentages of gamma radiation have brought about results that are an outstanding achievement in our specialty.

Today there are few who will dispute the superiority of radium treatment over all others for intra-oral carcinoma. The possible exception is cancer of the tongue, which is equally intractable with all methods. The recent work of Pfahler and others would indicate that this lesion also will yield to radiation if a proper technic is used.

Cancer of the lip has been a subject of controversy between surgeon and radiologist for a number of years. Naturally, one would expect any specialist to be partial to his own method of treatment. He might also be excused for prejudice against other methods, since he would rarely see the cures of his confrères but might be called on to treat their failures. I think this accounts largely for the difference of opinion between the surgeon and the radiologist regarding cancer of the lip. Probably the truth of the matter is that the primary lesion can be treated equally well by either method. The radiologist feels that his method produces better cosmetic effects with less likelihood of inducing metastases from traumatism to the lesion during treatment.

While irradiation has made remarkable progress in the treatment of cancer of the lip and mouth, metastases to cervical lymphatics in these lesions is still largely an unsolved problem. If the case is seen early, possibly this complication can be avoided by applying intensive radiation to the cervical regions as a part of the initial treatment. If palpable glands are already present, the prognosis is little different whether one applies intensive radiation or subjects the patient to radical surgical procedures. The results are unsatisfactory by either method.

There is another field in which radiation has made remarkable progress in the last twenty years. I refer to cancer of the breast. As early as 1903, x-ray treatment was used as an adjunct to surgery in this condition. Since then it has been used more or less as a routine after operation as a "prophylactic" treatment in an effort to prevent recurrences. The purpose of

the treatment is to destroy any cancer cells that may have been left by the surgeon at operation. Not all surgeons are agreed that this end is accomplished, and it must be admitted that satisfactory proof is not possible for the very simple reason that the presence of cancer tissue before treatment is only conjectural. If the patient does not develop a recurrence, it may be because the surgeon has removed all the cancer tissue and not because the radiation was effective. If a recurrence does develop, naturally the treatment has been ineffective. This set of circumstances presents the subject to the analytic mind in an unfavorable light. It is not helped by statistics that present entirely contrary conclusions as reported by different individuals.

One might argue that when opinions differ the patient should receive the benefit of the doubt and the treatment be given in the hope that it may do some good. The contrary argument is that harm may result from the treatment by lowering the resistance of the tissues and that irradiation in itself is known to predispose to the development of cancer, notably on the hands of x-ray workers.

The informed radiologist knows that visible recurrences in the chest walls following operation may be entirely eradicated by irradiation. If this is true, why should not invisible cells which may be left by the surgeon respond to similar treatment? He also knows that the amount of irradiation required to bring about this result, if properly applied, does not involve any great risk of tissue changes which may result in subsequent malignant degeneration.

Undoubtedly, postoperative irradiation must be applied skilfully to achieve this result without harmful effects; and it must be accepted that the special knowledge necessary to carry out this procedure successfully is comparable to that of the surgeon who performs the operation.

I have suggested the value of irradiation in the treatment of recurrences which seems to be more or less generally accepted by both surgeon and radiologist. Likewise, inoperable cases fall naturally to the radiologist for treatment. Such treatment is expected to be only palliative, but occasionally the results are astonishing. Large tumors shrink to small size or disappear entirely and metastatic glands recede in a remarkable manner.

The results obtained in some of these cases have led such surgeons as Moynihan, Cheate and Keynes to advocate irradiation alone in many cases which previously would have been treated by operation. The authors mentioned use radium inserted into and around the breast in preference to x-rays for these cases. However, the trend of the times is indicated when prominent surgeons advocate radium treatment for operable cases of cancer of the breast.

A similar situation prevails regarding carcinoma of the cervix of the uterus. Practically all the prominent gynecologic clinics of the world, in addition to a great number of individual gynecologists in every city, now use radium as the treatment of choice in this disease.

I have gone into some detail regarding the radiation treatment of cancer in various parts of the body in which this treatment is accepted as playing a prominent if not a leading part. There are various other locations in which its use is valuable and in which much work is being done to improve results; for example, in carcinoma of the bladder, prostate, rectum and penis.

A consideration of the great amount of work that has been done in these various lines and the point that has

been reached in the development of radiotherapy must impress on the radiologist the responsibility that now rests on him in the handling of the cancer problem. This responsibility is recognized by his confrères, as evidenced by the inclusion of the radiologist in the necessary personnel of the cancer clinics which have sprung up in all parts of the country. It is recognized by the public probably largely because of the propaganda of the American Society for the Control of Cancer.

Apparently, the radiologist himself takes his responsibility less seriously than any one else, if one may judge from the number who devote their time largely or entirely to diagnosis. This may be a reflection of the times when many physicians are striving to be diagnosticians and pay little attention to treatment.

Undoubtedly this situation was contributed to by the World War, which trained a great number of physicians in x-ray diagnosis, and these later entered civil practice with no interest in radiation therapy.

There are a few large centers in which it is practical to subdivide the specialty of radiology, some practicing diagnosis only and others therapy. However, the great bulk of our population will still be served by general radiologists, and they are entitled to all the advantages that have come with the development of radiation therapy.

It is the duty of every radiologist to keep abreast of the progress of his specialty. He has a responsibility in the cancer problem which he cannot evade and a moral obligation to the people in his community to provide them with whatever benefits may be obtained from radiation therapy.

500 Penn Avenue.

EVENTUAL RESULTS OF GASTRIC SURGERY

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Discussions as to the most efficacious surgical approach to the problem of ulcerative lesions of the stomach and duodenum have revealed abysmal differences of opinion on this subject. Controversy is as widespread as the disease, and at this moment, decades after the first successful operation, fervid arguments in many tongues circle the globe.

Should bold resection be applied? Should excision of the ulcer be followed by plastic operation? or should gastro-enterostomy be performed with no operative attack on the ulcerative area?

The proponents of bold resection, or plastic repair following resection of the ulcer, claim not only that the ultimate results are far superior to those attained by gastro-enterostomy, and the complications such as hemorrhage, perforation and carcinomatous degeneration less likely to occur, but that the extra hazard of gastrojejunal ulceration—much too frequent, as everyone agrees—is thus avoided.

These assertions are of course denied by those who favor gastro-enterostomy; they state that the ultimate results of gastro-enterostomy are excellent; that rarely does gastrojejunal ulceration occur, and that this operation shows a far more favorable rate of immediate mortality than does the subtotal gastrectomy.

From the Digestive Clinic of Johns Hopkins Hospital.
Read before the Section on Surgery, General and Abdominal, at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

A comprehensive search of the foreign literature on the subject of surgery for gastric and duodenal ulcer reveals the fact that by far the greater number of recognized authorities in Germany and Austria are definitely committed to subtotal resection as the operation of choice. As yet, it appears that the majority of eminent American surgeons prefer gastro-enterostomy, gastroduodenostomy, pyloroplasty or some such conservative type of operative procedure.

In the German and Austrian figures, primary mortality after resection ranges from Finsterer's 4.7 per cent¹ to Beckermann's² 17.5 per cent; and for gastro-enterostomy, from Friedrich and Weber's³ 0.6 per cent to Henle and Hammeke's⁴ 8.8 per cent. Their proportion of cures after resection varies from Koennecke's 75 per cent⁵ to Finsterer's¹ 98 per cent. After gastro-enterostomy, however, the proportion of cures is between Henle and Hammeke's⁴ 57.5 per cent and Bauer's⁶ 78 per cent. Moynihan⁷ noted a mortality of 1 per cent after gastro-enterostomy, with a series of 500 consecutive cases without a death; Charrier⁸ of Paris had no operative mortality after gastro-enterostomy, in a recent series.

Among the statistics given by American surgeons, Lewisohn⁹ cites 6.7 per cent primary mortality after gastro-enterostomy, with 47 per cent of cures. However, Berg⁹ states:

If we exclude from the mortality records the cases moribund at time of operation, which were operated upon only because of extreme life-saving indications, and they properly do not come under consideration, the mortality (after subtotal gastrectomy) falls to 7.7 per cent. . . . If the operator wishes to take only those patients who are in fairly good condition with fair hearts, lungs and kidneys, and blood, the mortality would be reduced to 2 per cent.

In 1924, Balfour¹ had a 2 per cent mortality after gastro-enterostomy, with 88 per cent cures; and Woolsey,¹ in 1926, gives the same percentages. Horsley,¹⁰ giving a report in 1930 as to results of pyloroplasty, showed 45 per cent satisfactory results, with 36 per cent not improved; after gastro-enterostomy, 67 per cent satisfactory, with 6 to 11 per cent not improved; and after partial gastrectomy, 72 per cent satisfactory, with 13 per cent not improved. Gatewood¹¹ stated that, in an analysis of 163 gastro-enterostomy cases between 1915 and 1925, the hospital mortality was 1.8 per cent; 82 per cent of the patients operated on were reported well or greatly improved, and the hospital mortality after gastro-enterostomy had in the past fifteen years been only 2.7 per cent. He also made the interesting assertion that resections for gastric and gastrojejunal ulcer noticeably increased in the years between 1925 and 1930 and that, although the series numbered only thirty, there was 10 per cent of gastrojejunal ulcer. Statistics recently compiled at the Johns Hopkins Hospital give a percentage of 84.6 cured, after gastro-enterostomy, with a mortality of 2.6 per cent.

The adherents of subtotal gastrectomy state that recurrent or marginal ulcer is seldom encountered after this operation; but Erdman⁷ remarks that in 1928 Bal-

four had already operated on twenty-eight patients with recurrent and marginal ulcers following gastrectomy for ulcer. Lewisohn,⁹ in 1925, gave as a reason for adopting subtotal gastrectomy instead of gastro-enterostomy for duodenal ulcer the finding of 34 per cent of gastrojejunal ulcers and only 50 per cent of cures, after gastro-enterostomy during the years from 1915 to 1920. Among continental authorities, the percentage of gastrojejunal ulcer after gastro-enterostomy is as follows: Schmieden,¹² 3.5 per cent; Schwarz,¹³ 8.9 per cent; von Flörcken,¹² 3.5 per cent; Oliani,¹⁴ 6 per cent; Bauer,⁶ 2 per cent, and von Redwitz,¹⁵ from 3.5 to 4.5 per cent. No less an authority than von Haberer¹⁶ of Vienna remains in favor of gastro-enterostomy, which in 365 cases gave only two peptic jejunal ulcers; in contrast to his opinion may be quoted another outstanding surgeon, Finsterer¹⁷ of Vienna:

Since up to the present the best results have been obtained by bold resection, which is certainly a safeguard against recurrent ulcer, and since I have observed very few poor results, I feel that the reproach of "a mutilating, barbarous operation" should be taken from bold resection, and that it should be lifted to the eminence of a safe and certain surgical procedure.

Moynihan¹⁸ states that the defect in relation to the shortcircuiting method lies more often with the operator than with the operation; in his most deliberate judgment, the recommendation of other and more extensive procedures lacks even initial justification. He claims that the mortality following gastrectomy is from 5 to 10 per cent, while that of gastro-enterostomy is now not more than 1 per cent, and in his opinion this mortality in subtotal gastrectomy is prohibitive and means that a larger number of persons are caused to die in order that a smaller number may live to experience a possibly slighter risk of developing a new ulcer.

Practically all surgeons, however, seem to agree on one point: that disaster will follow if either gastro-enterostomy or resection is undertaken without outspoken indications for it; that is, if during operation no signs of new or old ulcers are found, and no evidence of gastritis or obstruction. In ulcer, as in all other surgical conditions except malignant degeneration, the more definite the structural change, the more satisfactory the final result of operation.

All proponents of subtotal gastrectomy are outspoken in their assertions that secondary complications such as hemorrhage, perforation, postoperative adhesions and carcinoma are more likely to supervene after gastro-enterostomy than after subtotal gastrectomy. As I shall show later, this claim is by no means justified.

The research I am now presenting was instituted not only because of my vital interest in the subject but also because I feel that, when such sharp yet thoroughly honest divergences of opinion exist among surgeons, the eventual results of their handiwork, viewed from an internist's standpoint, cannot but be helpful.

I have long been convinced that statistics based in whole or in part on questionnaires forwarded to patients have been in the main fallacious and misleading; I therefore determined to deal personally with each patient, not only presenting the questions myself but also making thorough physical examinations and fluoro-

1. Cited by von Redwitz.¹⁵

2. Beckermann, L. S.: *Zentralbl. f. Chir.* 56: 2609 (Oct. 12) 1929.

3. Friedrich, R., and Weber, H.: *Arch. f. klin. Chir.* 171: 673, 1932.

4. Henle, A., and Hammeke, A.: *Beitr. z. klin. Chir.* 156: 187, 1932.

5. Koennecke, W.: *Chirurg* 3: 873 (Oct. 15) 1931.

6. Bauer, C.: *Deutsche Ztschr. f. Chir.* 225: 45, 1932.

7. Cited by Berg, A. A.: *Ann. Surg.* 92: 340 (Sept.) 1930.

8. Charrier, J.: *Arch. d. mal. de l'app. digestif.* 21: 1202 (Dec.) 1931.

9. Berg, A. A.: Personal communication to the author.

10. Horsley, J. S.: *Ann. Surg.* 92: 545 (Oct.) 1930.

11. Gatewood: *Ann. Surg.* 92: 554 (Oct.) 1930.

12. Cited by Ferro Luzzi, G.: *Policlinico (sez. chir.)* 28: 493 (Aug. 15) 1931.

13. Schwarz, Ebert: *Arch. f. klin. Chir.* 151: 280, 1922.

14. Cited by Schwarz.¹³

15. von Redwitz, E.: *Deutsche Ztschr. f. Chir.* 240: 1, 1933.

16. von Haberer, Hans: *Zentralbl. f. Chir.* 59: 1202 (May 14) 1932.

17. Finsterer, H.: *Beitr. z. klin. Chir.* 147: 74, 1929.

18. Moynihan, B.: *Brit. M. J.* 2: 1021 (Dec. 8) 1922.

scopic and laboratory studies; my conclusions are thus based on facts established by intimate personal contact with 100 patients from all walks of life.

The accompanying tables give the diagnoses, operations, and comparisons of preoperative with postoperative observations, expressed largely in percentages.

TABLE 1.—Diagnoses in One Hundred Cases

Duodenal ulcer.....	62	Carcinoma.....	7
Gastric ulcer.....	18	Pylorospasm.....	1
Perforated duodenal ulcer (acute) 3		Adenofibroma of pylorus.....	1
Perforated gastric ulcer (acute)....	3	Malfunctioning gastro-enters-	
Gastrojejunal ulcer.....	4	tomy (no ulcer).....	1
Duration of Preoperative Medical Treatment			
Average: A large majority, one to six years			
Extremes: Acute emergency (cases of perforation), fifty years			

I think it important to emphasize the fact that these cases were not selective; a series of nearly 500 letters was sent out, with the cooperation in several instances of eminent surgeons; the patients who responded and were able to make the necessary visits to the office were

TABLE 2.—Operations in One Hundred Cases

Posterior gastro-enterostomy....	44	Polya.....	3
Anterior gastro-enterostomy.....	9	Jejunostomy.....	2
Pyloroplasty.....	18	Degastro-enterostomization....	2
Resection.....	7	Cholecystogastrostomy.....	1
Excision.....	4	Pylorotomy.....	1
Closure with posterior gastro-		Division of anterior and posterior	
enterostomy.....	4	branches of vagus.....	1
Gastroduodenostomy.....	4		
Immediate Result of Operation			
95 per cent of all patients received immediate relief from pain			
Directions Given on Leaving Hospital			
80 per cent received full instructions as to hygiene diet and medication			
7 per cent received instructions as to diet only; 13 per cent no instructions			

of varying age and economic status, so that our results include both private and ward patients.

In these statistics it is of striking interest to note the ratio of gastric to duodenal ulcer—a much greater one than has been observed in most clinics. The length of time that elapsed from the beginning of medical treatment until surgical therapy was applied varies greatly and is of much importance. A noteworthy point is that 79 per cent of the patients have been following careful dietetic habits; this is most promising, since it proves that the combined efforts of surgeons and internists in stressing the vast importance of postoperative care and attention to diet are really producing a favorable effect; a few years ago, this important therapeutic measure was almost entirely ignored. In this connection it must be noted that the figures show a great improvement in the appetite.

A large percentage of patients in whom the preoperative bowel condition had been sluggish or irregular benefited greatly by operation, and tarry stools practically ceased to occur (1 per cent); this in itself shows conclusively that the ulcers do, for the most part, heal and do not reform; however, a surprising number of cases showed postoperative occult blood, and after a careful review of the histories and observations I feel that this can for the most part be accounted for by hemorrhoids and by failure to adhere strictly to the meat-free diet enjoined before specimens were sent in. The amount of bleeding could not have been marked, in any event, for only 11 per cent of anemia, and that very moderate in degree, was noted postoperatively.

Particular emphasis should be laid on the vast improvement in appetite and feeling of well being, on the high percentage of those restored to the ability to work, on the improvement in bowel function, and on the practical elimination of such untoward symptoms as nausea and vomiting.

Especially encouraging as regards the value of these conservative methods of surgical attack are the outstanding results, first, in the motor domain, the figures showing 97 per cent normal motor function, and, second, the very marked diminution in acidity, the large majority of acid values ranging from normal to achylia; the latter mounts to 19 per cent from a preoperative figure of 6 per cent. The efficacy of these operative procedures, particularly gastro-enterostomy, is shown by this remarkable decrease in acidity.

TABLE 3.—Clinical Data in One Hundred Cases

	Preoperative, per Cent	Postoperative, per Cent
Hematemesis.....	11	3 (1 attack each)
Nausea.....	69	13 (attacks rare)
Vomiting.....	54	11 (attacks rare)
Bowel:		
Constipated or irregular.....	74	47
Regular.....	26	53
Tarry stool.....	20	1
Occult blood negative.....	43	59
Hemoglobin, anemia.....	22	11
Urine.....	Entirely negative other than the slightest possible trace of albumin in a few cases	
Soreness (abdominal).....	43	17
Tenderness (abdominal).....	56	30
Restricted diet (very careful ever since operation).....		79
Appetite:		
Anorexia.....	34	3
Variable.....	31	24
Good.....	35	73
Ability to work (90% entirely able to work; remainder claim inability)		
Weight (57% gained; 15% lost slightly; 28% remained constant)		
Sex (males, 81%; females, 19%)		
Age at time of operation:		Per Cent
20 to 30.....		10
30 to 40.....		23
40 to 50.....		32
50 to 60.....		25
60 to 70.....		7
70 to 80.....		1

TABLE 4.—Motor and Secretory Functions

	Preoperative, per Cent	Postoperative, per Cent
Motor function:		
Normal.....	45	97
Obstruction.....	28	1
Delayed.....	11	1
Data missing.....	16	
Retention.....	..	1
Secretory function:		
Normal.....	34	31
Hyperchlorhydria.....	37	18
Hypo-chlorhydria.....	6	29
Achylia.....	6	19
Data missing.....	17	2
Retention.....	..	1
Objective (author's evaluation of results in 100 reexamined cases)		
Complete relief of symptoms after gastro-enterostomy		80
Complete relief of symptoms after all types of operation....		72
Marked improvement, with slight occasional discomfort.....		19
No improvement		9

The postoperative changes in regard to morphologic characteristics of the stomach are no less than phenomenal; the size, for instance, shows an almost incredible shrinkage; tone, shape and position again resume, or approximate, normal; peristalsis is greatly altered, the waves being remarkably diminished in frequency and in amplitude.

The subject of weight deserves mention; but while these cases presented an encouraging improvement I do not think it wise to lay too much stress on this point; constitutional characteristics must be taken into consideration; the functional capacity of the various organs, normal appetite, regular bowel function, a feeling of well being, and an ability to work are all far more important criteria as to the result of operation and the state of health than a mere gain in body weight.

As to sex and age, Zukschwerdt and Eck,¹⁹ in an article on postoperative peptic ulcer, note that a preponderance of ulcer patients are men in the middle decades, and the present survey bears out this finding.

While the prime necessity in every surgical case is of course careful preoperative preparation, and the skill and surgical judgment of the operator are of overwhelming importance, I feel that intimate and cordial cooperation between surgeon and internist is the most valuable detail of postoperative treatment, and I wish to emphasize strongly the fact that the excellent results that I have been able to present here are largely due to the presence of that factor. It is my considered opinion that every gastric operation should be followed by a sufficient period of painstaking postoperative treatment, for at least a year, I should say; and during that time several thorough general examinations should be made, including motor and secretory tests. I should like to register a plea for such postoperative care and attention wherever possible.

In regard to medical treatment for ulcer, it is quite true that in many cases it is not efficacious and is unreasonably prolonged; however, hasty decision as to surgical therapy should be avoided, for it is an inescapable fact that surgical intervention, as proved by statistics, does not by any means bring about in every case a radical cure nor even material improvement; and there are cases, indeed, in which the patient's condition is but aggravated by surgery.

In all frankness, I must say that there is no ideal operation for each and every case, and it therefore behooves the surgeon to develop a technic that will ensure his skilful application of any type of operation when and where it is needed; for, when all is said, it is on the skill and judgment of the surgeon that the patient's life immutably depends. This statement is well illustrated by the fact that twenty-five patients in this series were operated on by Dr. Dean Lewis, and 80 per cent of these made a perfect and complete recovery; the remainder, with the exception of a man who died of pneumonia three days after operation, show striking improvement. I may add that in questioning patients as to "complete cure" I insisted that the term might not be used unless there had been an entire cessation of *all* digestive complaints. In the division of "marked improvement," by far the greater number were at work, on a liberal though somewhat restricted diet, with no digestive complaints and rare disturbances of digestion; they consider, indeed, that they are enjoying excellent health.

The results of this research, compared with those quoted by Lewisohn,⁷ justify one in feeling great optimism in regard to the general results of gastro-enterostomy for gastric and duodenal ulcer; however, it is impossible, and would be highly unwise, to ignore the claims of the advocates of subtotal gastrectomy; they have a large number of cases showing ultimate

complete recovery and a minimum of postoperative complications and catastrophes. While I have refuted in these studies many of their accusations of the conservative types of operation, I am convinced that years of careful observation and detailed research lie before the profession and that the controversy will in the long run be settled only by the unbiased and the diligent.

CONCLUSIONS

1. The assertion that gastrojejunal ulceration occurs in 34 per cent of operative cases is conclusively disproved, and it is shown that catastrophic hemorrhage and perforation are the rare exception after gastro-enterostomy.

2. In view of the low immediate mortality and splendid end-results after gastro-enterostomy and other conservative types of operation, there is no justification for displacing them for subtotal gastrectomy, with its demonstrated higher immediate mortality.

3. Medical treatment of gastric and duodenal ulcer is usually too prolonged; it is undoubtedly true that many complications and catastrophes could be avoided if surgery were applied earlier. Hasty recourse to surgery is equally inadvisable.

4. In the vast majority of cases, conservative types of operation restore to normal the deranged motor power and diminish the acid values to an absolutely safe minimum.

5. Eighty per cent of complete cures after posterior and anterior gastro-enterostomy, 72 per cent of absolute cures after various conservative operations, 19 per cent of very marked improvement (rare digestive disturbance), and only 9 per cent of all cases unimproved provide incontestable proof of the value of the conservative type of surgical therapy.

6. The dire predictions of the proponents of subtotal gastrectomy as to devastating complications subsequent to gastro-enterostomy are refuted by their infrequent occurrence in the postoperative course of the one hundred cases here given; and it may be asserted on a basis of proved eventual results that gastro-enterostomy and other conservative types of operation furnish the safest and most valuable method of surgical attack in disease of the gastroduodenal area.

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ABSTRACT OF DISCUSSION

DR. J. SHELTON HORSLEY, Richmond, Va.: Dr. Gaither's summary of the results of gastric surgery and his careful follow-up observations hardly admit of any adverse criticism. His conclusions are equally admirable. A subtotal gastrectomy for every little peptic ulcer, as advised in some clinics, appears illogical. There should be no one single operation for all peptic ulcers. Some special type of medical or surgical procedure should be adapted to the ulcer that actually exists and not to the ulcer that one would prefer present. There is a definite but limited field for pyloroplasty and a larger field for gastro-enterostomy and for gastrectomy in peptic ulcer. Of peptic ulcers the gastric is far less frequent than the duodenal. I believe that almost all gastric ulcers should be operated on by partial gastrectomy because of the inherent tendency toward cancer, whereas duodenal ulcer may be treated medically almost indefinitely if the patient is relieved or if there are no complications. When operation for duodenal ulcer is indicated by some sequel or complication, then preferably, as Dr. Gaither has said, a simpler operation should be performed. This can be followed, if unsuccessful, by a more radical operation, such as partial gastrectomy. Harvey Cushing has recently called attention to the neurogenic origin of peptic ulcers, a theory originally of Rokitsansky's. There are some cases of peptic

¹⁹ Zukschwerdt, L., and Eck, T.: *Deutsche Ztschr. f. Chir.* 236: 424, 1932.

ulcer which, no matter how carefully they are treated, will recur in spite of everything, and that type of case is always accompanied by high secretion of hydrochloric acid. Cushing was stimulated to study this by the loss of three patients from perforated peptic ulcer following operations on the base of the brain. Physicians might benefit by following the recommendation of Walter Hughson in cutting the vagus nerve below the diaphragm or by dividing or resecting the anterior gastric branches of the vagus along the lesser curvature, in addition to doing whatever operation may be necessary. It is simple and can be done in a few minutes. I want to protest against an operation that has been occasionally done and which is utterly unphysiologic; that is the anastomosis of the gallbladder to the stomach for the cure of peptic ulcer. At the end of digestion the pyloric sphincter relaxes and the duodenal contents regurgitate into the stomach and so lessen gastric acidity. The duodenal contents are highly alkaline because of the pancreatic juice, while the bile is hardly alkaline at all, being almost neutral; but from the gallbladder only the bile would go into the stomach. In addition, if the common duct is unobstructed, hardly any bile goes over. The gastric juice in these cases is highly acid and regurgitates into the gallbladder and injures it. So this operation is fallacious from three different standpoints, and it should never be done for the cure of a peptic ulcer.

DR. ALFRED A. STRAUSS, Chicago: If gastrojejunal ulcer occurs in only 2 to 3 per cent of the patients operated on by gastro-enterostomy and if this percentage could be universally proved, I doubt whether I would continue to do gastric resection for duodenal ulcer. In the stomach group at Michael Reese Hospital, my impression from the number of cases of gastrojejunal ulcer that I see following gastro-enterostomy from various clinics is that the incidence of gastrojejunal ulcers after gastro-enterostomy is somewhere between 5 and 15 per cent. Many of the cases occurred ten and fifteen years after the gastro-enterostomy had been performed at some clinic. Surely these cases are not recorded in their percentage of gastrojejunal ulcer and, therefore, I feel that it is exceedingly difficult to arrive at a definite figure of occurrence. While I admit that Lewisohn's statistics of 34 per cent seem high, one must admit the care with which the work of this author was done, and there are a number of well known European clinics that have reported an occurrence of between 15 and 25 per cent. I will grant that the mortality of gastric resection is somewhere between 3 and 5 per cent and that the mortality of gastro-enterostomy is much lower; but if one adds the mortality that must come from the additional 5 to 15 per cent of gastrojejunal ulcers following gastro-enterostomy, I feel quite sure that it would amount to much more than 5 per cent. Much more important to my mind is the question "When does a duodenal ulcer become surgical?" There are three definite indications: First, the patient must show a clover-leaf deformity, which usually means a duodenal ulcer infiltrating the posterior wall which has existed for some years and which will not yield to medical treatment; second, there is a true anatomic obstruction and deformity at the duodenum, so that the patient is actually suffering from a mechanical obstruction in addition to his ulcer; and, third, the economical condition of the patient prevents him from continuing with medical treatment. When these factors are present, I prefer to do a subtotal gastrectomy to gastro-enterostomy. I believe that I am very conservative in my surgical indications but when surgical treatment is indicated, I feel that a more radical operation is the most conservative after all. In 1930 I reported 225 resections for duodenal ulcer with a 5.4 per cent mortality. Since that time I have done about another 125 resections and the mortality rate is down to somewhere around 4 per cent. I doubt whether men who do gastro-enterostomies could equal the mortality rate of gastric resection if they added to their own the mortality rate of their recurrent ulcers. I believe that the incidence of gastrojejunal ulcer following gastric resections is somewhere between 1 and 2 per cent, which corresponds to the figures quoted in European clinics.

DR. ERNEST H. GAITHER, Baltimore: In reply to Dr. Strauss, we at Johns Hopkins Hospital have not witnessed after gastro-enterostomy and other types of operation just presented such untoward results as those noted by Dr. Strauss and his colleagues; and we continue strongly to uphold conservatism in regard to gastroduodenal surgery.

ABDOMINAL PAIN IN PREGNANCY

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Abdominal pain in pregnancy is frequent and has not been thoroughly studied. Few pregnant women escape some abdominal discomfort or distress. Eighty-five per cent definitely complain of such pain at some time during the nine months. The literature on the subject is meager. Brief references are scattered through obstetric textbooks.¹ Only two journal articles in English could be found;² hence this clinical study of abdominal pain in 300 consecutive private obstetric cases.

Since it is entirely unpractical to attempt to name all the causes of abdominal pain, with or without pregnancy, this paper will deal only with abdominal pain that is directly caused by or closely associated with the enlarging uterus or the pregnant state. Pregnancy is, of course, not immune to any of the numerous intra-abdominal and extra-abdominal conditions that cause pain in the abdomen, a fact to be most strongly emphasized and ever borne in mind.

Nervous anatomy, detailed differential diagnosis and therapy are not considered. There can be no discussion of the theory and definition of pain and only brief reference to the mechanism of the production of abdominal pain. Much abdominal pain in pregnancy is somatic, i. e., arises in the parietes of the abdomen. Mackenzie's theory of the viscerosensory reflex may explain the localization of some true visceral or splanchnic pain.³ However, the conclusion that pain may be actually felt locally in both solid and hollow viscera seems unescapable. Examples of visceral pain felt locally in the organ involved are the pain of ablatio placentae, of a subserous fibroid under tension, or of a distended and inflamed ureter or kidney pelvis. John Morley has well summarized the differences in the character of visceral and somatic pain: Pure visceral pain is deep seated, dull and heavy, often intermittent, widely radiating and imperfectly localized; in contrast, pure somatic pain is more superficial, sharp and stabbing, felt over a smaller area, more accurately localized, and at times associated with local tenderness and muscular rigidity.⁴ These differences should be remembered during the further development of this paper.

ETIOLOGY OF ABDOMINAL PAIN IN PREGNANCY

True inflammation is not an important etiologic factor. Most abdominal pain in pregnancy is the direct or indirect result of either uterine enlargement or uterine contraction. Uterine enlargement causes pain by its own distention (often with or followed by uterine contraction) or by pull (stretching) or pressure exerted on organs or tissues. Uterine contraction causes pain chiefly by smooth muscle tension, which Hurst⁵

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. De Lee, J. B.: Principles and Practice of Obstetrics, ed. 6, Philadelphia, W. B. Saunders Company, 1933, p. 584. Haultain, W. F. T., and Falmy, E. C.: Antenatal Care, New York, William Wood & Co., 1929, chapter XI, p. 93.

2. Williams, Leslie: Abdominal Pain in Pregnancy, Clin. J. 55:463 (Sept. 29) 1926. Lane-Roberts, C. S.: Abdominal Pain in Pregnancy, Postgrad. M. J. (London) 2:180-183, 1927; Lancet 2:1228 (Dec. 22) 1928.

3. Mackenzie, James: Symptoms and Their Interpretation, New York, Paul B. Hoeber, Inc., 1912.

4. Morley, John: Abdominal Pain, New York, William Wood & Co., 1931.

5. Hurst, A. F.: Sensibility of the Alimentary Canal, Oxford University Press, 1911.

believes to be the cause of all true visceral pain. However, it is difficult to explain why one uterine contraction is painful and another not, when the two are of the same apparent intensity and degree of hardness to the examining hand. The pain of both enlargement and muscular contraction of the uterus is augmented by the pain produced in the abdominal wall by these two processes. Disturbances of function (e. g., ureteral dilatation) and interference with the blood supply (e. g., degeneration in a subserous fibroid) are at times causative or contributory. Three other conditions must be mentioned in this brief consideration of the etiology of abdominal pain in pregnancy—extra-uterine gestation, certain types of placental hemorrhage, and “liver” toxemia.

Abdominal pain in pregnancy is frequently without physical signs, is with difficulty described by the patient, and often strangely comes and goes without apparent reason. Generally speaking, its severity is in direct proportion to the rapidity of the development of the cause. An atypical pain occasionally defies analysis; most of these can be traced to their source by study—sometimes, it is true, only in retrospection. It is very important to remember that individuals differ markedly in their reaction to painful stimuli and also that many factors in all pain production are still undetermined.

FACTORS INFLUENCING ABDOMINAL PAIN IN PREGNANCY

Age.—Ranging in this series from 17 to 48 years, age alone apparently exerts no influence.

Parity.—Primiparas complain slightly more frequently of abdominal pain than multiparas. The latter are rarely able to recall any suffering in a previous pregnancy.

Habitus.—The tall slender asthenic woman suffers more from stretching of the lower part of the abdominal wall, while the short stocky sthenic patient with short abdomen from the pubis to the ensiform cartilage tends to have more pain in the upper part of the abdomen. The difference is not marked.

TABLE 1.—Complaints of Pain by Month of Pregnancy

Month of Pregnancy	Number of Complaints
First.....	5
Second.....	19
Third.....	22
Fourth.....	40
Fifth.....	60
Sixth.....	65
Seventh.....	85
Eighth.....	117
Ninth.....	65

TABLE 2.—Complaints of Pain and Location in Abdomen

Lower part of abdomen...	341	The complaints of pain were more than twice as frequent in the lower as compared with the upper part of abdomen
Central part of abdomen...	38	
Upper part of abdomen...	142	

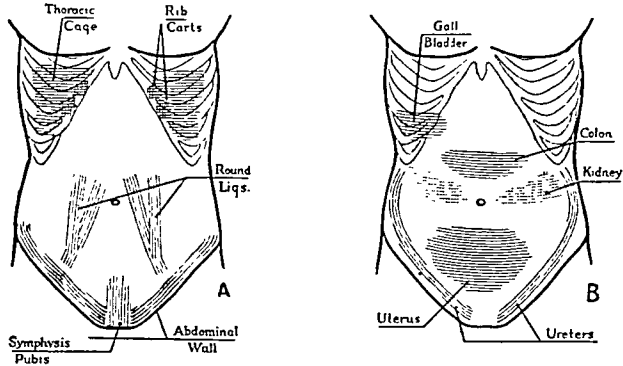
Period of Pregnancy.—The incidence of pain increases with each month up to the ninth and then markedly lessens, there being only slightly more than one-half the number of complaints of pain in the last month as in the eighth. I have no explanation for this apparent contradiction. Practically all pain disappears post partum, that of the biliary and urinary tracts occasionally excepted.

Time of Day.—Symptoms due to stretching of the lower part of the abdomen and round ligaments are worse at the end of the day. Pain that wakes the patient at night is usually colic of a hollow viscus or an intra-abdominal accident.

Region of the Abdomen.—Pain is more frequent in the lower than the upper part of the abdomen, and in

TABLE 3.—Distribution of Pain in the Lower Abdomen

Location		Comment
Low median...	44	Most of these originated in or about the pubis; some, diffuse uterine pain; possibly a few from the large bowel and bladder
Mediolateral...	Rt. 43 Lt. 28	Most seemed to be from the round ligaments; a few from the abdominal wall, ureters and large bowel
Marginolateral	Rt. 55 Lt. 42	Most of these from the abdominal parietes; a few from ureters and large bowel
Radiating up and out from the lower lateral part of abdomen	Rt. 17 Lt. 10	Nearly all were probably from the ureter. They were fairly evenly distributed between the fourth and eighth months, inclusive
Diffuse or transverse between navel and pubis	76	The greatest part originated in the uterus; some from the large intestine
Poorly defined	26	



The common locations of abdominal pain in pregnancy. (A) of somatic origin; (B) of visceral origin.

both more on the right side. The lower part of the abdomen is the region of the greatest changes during pregnancy. The location of the appendix and gall-bladder on the right, the displacement of the uterus toward that side and the greater activities of the right extremities may partially explain the preponderance of right-sided pain. Early in pregnancy the pain is almost always low in the abdomen; if central, in the bladder or uterus; if lateral, in the ovary or occasionally in the tube or round ligament. Later, the pain caused by stretching of the abdominal wall and round ligaments is common. In the last two months the pain is still chiefly in the lower part of the abdomen and is, without question, most frequently of uterine origin.

Tables 3, 4 and 5 give the location of the complaints of pain in more detail, the number of complaints in the different areas and comments on the origin of the pain. There is a preponderance of pain on the right side in all.

Scars.—Among the 300 cases there were forty-seven operative scars of varying age, length and location. In only seven instances was there pain in or near them—a finding contrary to common impression.

Position, Exertion and the Like.—Walking or sudden body movement sometimes causes a painful local cramp in the distorted abdominal muscles or round ligaments. Lower abdominal pain caused by stretching

these tissues or the pelvic joints is usually increased by the patient being on her feet and is relieved by rest and adequate support. A painful round ligament is not uncommonly stretched and made worse by the patient lying on the opposite side. Pain in the upper part of the abdomen is often made worse by sitting (pressure increased) and made better by standing (pressure less-

TABLE 4.—*Distribution of Pain About the Navel**

Location		Comment
Central	14	These were often ill defined and of undetermined origin; some of small intestine, some of abdominal wall
Below navel	Rt. 9 Lt. 4	These can probably be, in most instances, grouped with the mediolateral pains in the lower part of the abdomen, group 3
Above navel	Rt. 8 Lt. 3	Most of these seemed to originate in the large bowel or kidney

* Some of the pains in this central abdominal region originate locally in the abdominal wall or uterus. Some probably have nothing to do with pregnancy.

sened). Sudden increase of intra-abdominal pressure may start or aggravate abdominal pain; e. g., by coughing, sneezing, vomiting or the like. Jolting and jarring at times make worse the symptoms of an ectopic gestation or a "pyelitis." Weak feet, faulty shoes, relaxed sacro-iliac joints, disturbances of equilibrium and changes of stress and strain in the back and abdomen are undoubtedly definite though often obscure factors in the production of abdominal pain in pregnancy.

Position and Presentation of Fetus.—In vertex presentations the side on which the buttocks are seems to be slightly more frequently the site of pain. Distress in the upper part of the abdomen is common with a breech.

Intra-Abdominal Conditions.—Previous pelvic or abdominal peritonitis does not particularly predispose to pain in a subsequent pregnancy if the inflammatory process has ceased. Adhesions in and of themselves are without symptoms, unless by action of the uterus they are made in some way to interfere with function. Some painful intra-abdominal conditions may be

TABLE 5.—*Distribution of Pain in the Upper part of the Abdomen*

Location		Comment
Lateral	Rt. 22 Lt. 21	Seemed to originate chiefly from the kidney or colon, especially the former if radiating laterally and posterior (on the right 6, on the left 2 so radiated)
Costal	Rt. 25 Lt. 11	Thoracic cage, ribs, diaphragm, gallbladder
Epigastric	32	This group might be further divided into high and low, localized and diffuse; the greatest number probably came from the liver or biliary tract; of all abdominal pain in pregnancy these are, especially if without other symptoms, the most difficult to interpret
Transverse above navel	22	Practically all appeared to originate in the colon

improved by or during pregnancy; e. g., abdominal hernia, visceroptosis, gastric ulcer. In general, however, the pregnant abdomen seems to be more prone to painful sensations than the nonpregnant. Some pre-existing intra-abdominal conditions are frequently worse; e. g., inflammatory processes, stasis or obstruction of the intestinal and upper urinary tract, disease of the liver and bile passages, and abdominal carcinoma.

CLASSIFICATION OF ABDOMINAL PAIN IN PREGNANCY

A satisfactory classification of abdominal pain in pregnancy is difficult. Possibly, excepting colic, muscle spasm, sudden rending of tissue and sudden peritoneal insult, the average patient's characterization of pain is not clear and is of questionable value. For this reason, little description of pain has been attempted.

The anatomic origin of abdominal pain in pregnancy may be grouped as follows:

1. Abdominal parietes.
2. Uterus, its contents and adnexa.
3. Extragenital locations—intestine, liver with bile passages, and urinary tract.

It is probably simplest and best to consider in order pain originating in these locations, at the same time discussing the mechanism of its production, and the location of the pain as felt by the patient.

PAIN ARISING IN THE ABDOMINAL PARIETES

The term abdominal parietes includes not only the anterior and lateral abdominal muscles with their fascial coverings, extensions and insertions, the subperitoneal tissue and the parietal peritoneum, but also the pelvic girdle, the lower part of the thoracic cage, and the pelvic and costal diaphragms.

The posterior wall of the abdomen is not, strangely enough, a proved source of pain in pregnancy. It is entirely possible that some ill defined abdominal pain may be a true referred pain from the posterior wall. A lower lateral abdominal pain, relieved by lying on the side with the thigh sharply flexed, has suggested psoas muscle origin.

Stretching of the skin and fat of the anterior and lateral abdominal wall does not cause actual pain, nor does the thickness of the wall seem to be an important factor. Short, sharp, scattered, stabbing pains in the lower part of the abdomen suggest—and only suggest—stretching of the subperitoneal tissue. Indefinite, ill defined, more or less general lower abdominal pain may be due to stretching of the wall or round ligaments (if early), but I believe it is more commonly of either large intestinal or uterine origin—especially the latter. Generally speaking, pain caused by stretching of or pressure on the lower abdominal wall is felt most commonly along a broad band curving from one antero-superior spine down over Poupart's ligaments and the pubis to the opposite spine. The patient will often outline this pain by moving her hands up and down along this area or by putting her hands in a position as if to support the abdominal wall in this region. The painful sensations are sometimes complained of as being sharper over the centers of Poupart's ligaments (insertion of the round ligaments) and over the pubis and pubic spines (insertions of Poupart's ligaments and the rectus muscles). These pains are not in evidence in early pregnancy, are very variable in character and appearance irrespective of the tenseness of the wall, and are influenced by factors already mentioned.

The region of the pubis may be painful by direct pressure of the fetal head or by stretching of the rectus insertions and the pelvic girdle. A low, central, more or less vertical pain above the pubis, indicated at times by a typical up and down movement of the patient's hand and fingers, seems to be associated with relaxation of the symphysis pubis, often with demonstrable tenderness, even separation, of the joint as well as tenderness of the sacro-iliac joints. Rarely, sudden

"lightning" may cause lower abdominal pain. Stretching of the pelvic diaphragm in the later months sometimes results in a sharp pain shooting from the pelvis or vagina up through the lower part of the abdomen.

Abdominal hernia may be painful by stretching of the ring or by pull on adherent intestine or omentum. Usually, unless the sac has adherent contents, hernias are "cleared" by the rising uterus and give no symptoms. The larger the hernia, the farther from the midline and the higher in the abdomen, the less likely is this "clearing" to take place. In a few instances, I believe that I have observed pain due to stretching of the tissues about the navel.

In the upper part of the abdomen, in the later months, is the discomfort, occasionally amounting to pain, caused by stretching of and pressure on the lower thoracic cage (including rib margins with rectus insertions) and on the diaphragm, which is at times felt in the back at the level of the insertion of the diaphragm. Fairly common is the painful "slipping" of the (usually) seventh or eighth costal cartilage with definite localized tenderness. As always, pain in the upper part of the abdomen may present many diagnostic difficulties.

PAIN ORIGINATING IN THE UTERUS AND ADNEXA.

Two types of pain originate in the uterus: local and diffuse.

The local type, sharp, sudden, usually well localized, is caused by tension or tearing of uterine tissue or in a fibroid. It is often accompanied or followed by the diffuse type.

Diffuse uterine pain is caused by uterine distention and (or) contraction (the latter with an element of colic) and is felt in the lower part of the abdomen between the pubis and the navel, an area connected with the eleventh and twelfth segments of the dorsal cord. Occasionally, diffuse uterine pain is felt above the level of the navel or in the anterior thighs and has been explained on the basis of an anomalous nerve distribution or supply. However, I am not at all sure that diffuse uterine pain is a Mackenzie viscerosensory reflex. The patient usually indicates its site by drawing her hand more or less horizontally across, though not entirely across, the lower part of the abdomen, or by drawing both hands in the same manner a little lower nearer the pubis. The diffuse type of uterine pain is intermittent (though in early abortions apparently almost continuous), often begins at night, is accompanied by sacral pain and hardening of the uterus, is not relieved but usually made worse by enemas, and is often followed or associated with vaginal discharge.

Uterine contraction is by far the more frequent cause of the diffuse type of uterine pain, threatening or presaging abortion if early, labor if late. Here belong the "false" or "wild" pains. Rapid stretching of the uterine musculature produces the same type of pain without the element of colic (though this is often added or superimposed), as in acute hydramnios, accidental hemorrhage and infected uterine contents. In this category is the incarcerated uterus with bladder distress. Any acute uterine distention may also exhibit pressure symptoms on the wall or contents of the abdomen. Abruptio placentae usually presents a sudden, sharp, more or less severe local pain due to tearing of tissue, followed by diffuse pain. The same occurs with hemorrhage in a hydatidiform mole, though usually earlier in pregnancy. Rupture of the uterus gives

the pain of muscle tearing, followed by that of peritoneal irritation due to escaped blood and uterine contents. If the rupture is rapid, extensive and in the upper part of the uterus, the peritoneal signs may be most marked in the upper part of the abdomen with shoulder pain. If the placenta lies under the point of rupture, all symptoms are frequently less severe. An abdominal pregnancy is usually quite painful because of more direct undamped fetal trauma. Fetal movements are occasionally painful, even in a normal pregnancy, especially in a tense uterus or when they impinge on a tender tissue or organ.

Fibromyomas in the pregnant uterus, even when large and multiple, are frequently without symptoms. They may cause pain by torsion of a pedicle, by pressure of a fibroid mass and by tension in a fibroid (usually subserous) owing to circulatory, degenerative and even infective changes. This last cause (tension in a fibroid) is the most common cause of abdominal pain in pregnancy associated with uterine fibroids and is usually well localized by the patient. The prominence, tenderness and pain of the tumor is increased by or with uterine contractions (cause or effect?). Small fibroids of this type, or small intramuscular or subserous hemorrhages are, I believe, the most common cause of local pain and tenderness in the pregnant uterus. More or less continuous local uterine pain or painful uterine contractions over a considerable period of time without the onset of labor are produced in many cases by the efforts of the uterine musculature to expel small fibroids from its midst. A previous explanation has been "faulty uterine innervation."

The round ligaments might well be considered in many respects a part of the anterior abdominal wall. Pain by their stretching or contractions is common in the lower part of the abdomen from the tenth to the thirtieth week and is felt for a shorter or longer distance along their course from the middle of Poupart's ligaments to the angles of the uterus, though rarely if ever felt above the level of the navel. The ligaments or portions of them can often be felt as tender cords, and the patient usually indicates very accurately their location—at least the painful segments. Here belongs the ligament pain associated at times with a previous suspension.

Salpingitis is rare in pregnancy, and I have not definitely observed pain from that source. Varicose veins of the broad ligaments are said to cause pain; their diagnosis must be difficult. Ectopic gestation exhibits abdominal pain that may vary greatly in location, degree, character and order of appearance; e. g., the low unilateral pain of tubal distention and colic (the tube is stated to be connected with the twelfth dorsal spinal segment), often accompanied by the diffuse type of uterine pain; the local pain of slow rupture of the tubal wall and the effusion of blood into the pelvic tissue or the pelvic peritoneum; the sudden pain of tubal rupture or tubal abortion that "doubles the patient up" (visceromotor reflex?); the diffuse pain of peritoneal irritation. Much depends on the rapidity of the development of the cause.

Pain arising in the ovary during early pregnancy seems to be due to distention of the capsule by the formation of the corpus luteum with more or less hemorrhage, apparently intensified by the presence of "adhesions" and traction by the rising uterus. Pain of ovarian origin later in pregnancy is most commonly associated with the twisting of the pedicle and (or)

inflammation of some type of ovarian tumor—the word tumor being used here in the broadest sense. Then follows a more or less definite series of pathologic changes accompanied by various sorts of pain. Though the ovary is said to be connected with the tenth dorsal cord segment, the pain in the few cases of twisted ovarian pedicle that I have seen appeared to be lower in the abdomen than the level to which the tenth dorsal segment is usually assigned.

PAIN ORIGINATING IN THE INTESTINAL TRACT

Occasionally, pain in the right or left upper quadrants, across the upper part of the abdomen or along the course of the descending and sigmoid colon is relieved by the passing of gas or by “unloading” the bowel. A laxative or an enema is sometimes a valuable diagnostic aid. However, real abdominal pain from flatulence or constipation is not so frequent as has been stated.⁶ This raises the question of the localization of pain of the large intestine. Hurst⁵ believes that pain arising in the more fixed portions of the large bowel can be fairly well localized by the patient, while pain arising in the more movable portions is felt as a diffuse pain in the lower part of the abdomen. Transverse pain across the abdomen above the navel, frequently with or followed by loose stools, is apparently caused by increased peristalsis of the large intestine. Such intestinal disturbance may imperil the life of the fetus and is not uncommonly followed by painful uterine contractions, threatening the continuation of the pregnancy. In the three hundred cases studied there were only two in which there was evidence of mechanical obstruction of the small intestine. The causes of their symptoms were never definitely determined, for they did not come to operation. It is possible that some indefinite central abdominal pain in pregnancy originates in the small bowel. Pregnancy tends to increase intestinal stasis, or any intestinal obstruction, whether from intrinsic or extrinsic causes. The usual explanation is that the symptoms are produced by pressure on or angulation of the portion or portions of the intestine in question, influenced by increased vascularity and by the presence of adhesions and pelvic tumor. Definite symptoms of intestinal obstruction should never be ascribed to pregnancy alone.

PAIN ORIGINATING IN THE LIVER AND BILIARY TRACT

Any preexisting pathologic condition in the liver and biliary tract is almost always worse during pregnancy. Three conditions, induced by pregnancy and frequently associated, may produce pain in this sensitive organ group:

1. Trauma by pressure of the uterus, or fetal part, or fetal movement in the upper right portion of the abdomen and epigastrium.
2. Changes in the liver, gallbladder and bile tracts due to increased demands on liver function, increased cholesterol production, interference with bile drainage, and increased absorption of toxic and infectious material from the intestinal tract. The conditions mentioned in 1 and 2 present no special diagnostic difficulties peculiar to pregnancy.
3. “Liver” toxemia, so called, especially if acute and in late pregnancy. The pain, more or less continuous, is often very sharp and severe, usually centering in the

epigastrium. The mechanism of its production is not clear—possibly tension of the liver capsule by hemorrhage or necrosis in the liver parenchyma (?).

PAIN ORIGINATING IN THE URINARY TRACT

The bladder and pelvic ureters are rarely the source of any pain during pregnancy. On the other hand, the abdominal ureters and the renal pelves are quite commonly the site of changes, often on a preexisting base which give rise to pain and other symptoms loosely and carelessly termed “pyelitis of pregnancy.” Stasis and infection are the two prime causative factors. The stasis is due to two phenomena peculiar to pregnancy: (1) pressure of the uterus on the relaxed ureters lying on the bellies of the psoas muscles, whither they have been displaced by the uterus as early as the eighth month in 80 per cent of pregnancies; (2) hypotonicity of the ureters and renal pelvis, probably caused by some specific substance elaborated during pregnancy. These hypotonic changes are 100 per cent in evidence by the fifth month, increasing as pregnancy advances, 83 per cent in both ureters, 15 per cent in the right one alone, and 2 per cent in the left alone.⁷ A bacteriuria is present in a considerable number of pregnant women. In most patients the stasis exists with few or no symptoms, as does the infection. It is impossible to state with any degree of certainty just what extra factor or factors initiate pain in a given case. It seems fairly clear that it is produced by tension of smooth muscle or an encapsulated organ (ureter, renal pelvis, kidney) by obstruction, or infection, or both. The pain is rarely colicky but rather continuous with exacerbations. The patient indicates ureteral or radiating (?) renal pain by moving the hand from the region of the pubic spine outward and upward, parallel with Poupart's ligament, to near the anterosuperior spine of that side, and then curving back into the loin, more often on the right than on the left side. Occasionally, she passes the hand downward in the reverse direction. It may be at times difficult to distinguish this pain from that originating in the large bowel, round ligaments or abdominal wall; but the typical movements of the patient's hand and other symptoms usually make the situation clear.

Even marked pathologic changes in the renal pelvis and kidneys may cause no abdominal pain. When such pain does occur, it is usually indicated by the patient at some point in an area of moderate width extending from about the level of the navel (tenth dorsal segment) outward to just below the rib margin, and thence lateral and posterior into the loin. The diagnosis of a “pyelitis of pregnancy” should never rest on the evidence of abdominal or other pain alone.

SUMMARY OF ABDOMINAL PAIN IN PREGNANCY

Abdominal pain in pregnancy may be classified as to anatomic origin, mechanism of production and location as felt by the patient. The anatomic origins may be grouped into (1) abdominal parietes, (2) uterus with contents and adnexa, and (3) extragenital organs and tissues.

The pain may be of somatic or visceral origin and is caused chiefly by distention or contraction of the uterus; its source can usually be determined.

Eighty-five per cent of pregnant women complain of definite abdominal pain at some period.

6. Cabot, R. C.: *Differential Diagnosis*, Philadelphia, W. B. Saunders Company 1: 131, 1919.

7. Schumacher, Paul: *Intravenöse Pyelographie bei 100 schwangeren Frauen*, Arch. f. Gynäk. 143: 28, 1930.

The incidence of pain increases with each month up to the last, at which time there occurs a marked decrease.

There is more pain in the lower than in the upper part of the abdomen and in both more on the right side.

Abdominal pain in pregnancy varies much in character and severity and is influenced by many factors.

Pregnancy is not immune to any of the causes of abdominal pain.

CONCLUSION

Sir James Mackenzie said that pain is the most important of complaints and the most instructive diagnostic sign. Knowledge of pain is scanty; exact information is largely lacking; investigation is difficult; interpretation of observations is uncertain, and the subject is worthy of study. These words apply also to abdominal pain in pregnancy, a subject to which this clinical study is submitted as a modest contribution.

123 Murray Street.

ABSTRACT OF DISCUSSION

DR. RAE T. LAVAKE, Minneapolis: The importance of pain in pregnancy can be further illustrated by recent experience at the Minneapolis General Hospital, where in the months of April and May eleven women were operated on for ectopic pregnancy. Some of these women had no physical examination until severe pain or pain and collapse made it imperative. Others, however, because of the early and careful and frequent examination of their attending physicians, had been directed to operation before rupture. It is not necessary to enlarge on the relative simplicity of making a differential diagnosis in cases in which a previous examination has established the state of the abdominal and pelvic organs as compared to the situation in which one faces severe illness without any knowledge of the previous condition of the abdomen and the pelvis. This brings into relief the importance of early prenatal care. Dr. Blakely has well brought out and emphasized the two most frequent causes of pain in pregnancy: (1) threatened premature termination of pregnancy and (2) some disturbance of the upper urinary tract. He has outlined pathologic conditions, obstetric, gynecologic and purely abdominal, that may cause pain in pregnancy and has pointed out the accredited theories of pain in pregnancy, the different types of pain and their position according to anatomic considerations. What I should like to emphasize is that the implications of this paper speak for immediate attention to abdominal pain in pregnancy and against treating it with indifference until after repeated and careful examination one can prove with reasonable certainty that the pain comes under the category of minor, inconsequential pains. Fewer mistakes will certainly be made if the matter of differential diagnosis is approached as Dr. Blakely has approached it; namely, by eliminating in turn pain caused by genital, urinary, gastro-intestinal organs, the biliary tract, and the abdominal parietes.

DR. STUART B. BLAKELY, Binghamton, N. Y.: I feel that all pain is important. One cannot help but disagree with the writer of a textbook on obstetrics that much abdominal pain is rheumatic. I feel that no pain is minor. I don't think it is ever minor. Most abdominal pain in pregnancy can be diagnosed and the source determined if a little care is taken in investigating and questioning the patient.

Professional Opinion.—Why is professional opinion such a stern master? . . . It is because having for a long time effectively resisted the seductions which beset your immediate advance, they look closely to see if in you, too, lies the quality to know and the power to achieve behavior consonant with the traditions of the profession you have just now entered. You are on probation. Professional opinion tests you to learn if you deserve the brotherhood of medicine. Of the things it looks for, I shall speak of only three—sincerity, charity and loyalty.—Colwell, A. H.: Address to Graduating Class of School of Medicine, University of Pittsburgh, Pittsburgh, *M. Bull.*, Sept. 9, 1933.

FOOD POISONING

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"Food poisoning," although the term has been used frequently in the diagnosis of other disorders, should be limited in its definition to describe that clinical syndrome resulting, directly or indirectly, from the ingestion of food contaminated with certain bacteria. Although the condition has been more or less frequent in its occurrence, probably for centuries past, it is only comparatively recently that it has been possible to study the problem intelligently. The clinical picture is often that of an intoxication, and, in certain instances at least, metallic and other chemical poisoning has been simulated. These and other factors have meant for confusion in terminology and in rational study.

It is generally recognized today, however, that there are two general types of food poisoning, namely: 1. Botulism, or botulinus poisoning, caused by eating food contaminated with *Clostridium botulinum*, a toxin-producing anaerobe which has a widespread distribution in the soil as a spore; this rare condition is highly fatal, the toxin apparently affecting important neurologic centers and functions. 2. Food poisoning per se, in which the contaminant is usually of the paratyphoid enteritidis group of organisms, frequently traceable to human or animal carrier sources; this common condition has a low fatality rate, and, while simulating an intoxication very frequently, it may produce a true infection. While botulinus poisoning is truly an intoxication, in which the toxin is neurotropic in its action, food poisoning is almost entirely an intoxication affecting primarily the gastro-intestinal tract.

It is our purpose in this paper to describe three outbreaks of food poisoning which were investigated by the Department of Public Health of the City and County of San Francisco, to point out the prevailing practice of investigative procedure in certain cities, and to present an argument for the public health official's interest in the problems offered in the control of this preventable illness.

AN OUTBREAK PROBABLY DUE TO B. ENTERITIDIS

On being advised by the manager of public utilities of an outbreak of food poisoning in Camp Mitchell, a labor camp on the Hetch Hetchy project, the San Francisco Department of Public Health started an investigation. Because of the fact that the camp is situated in another county, which at that time did not have a full-time health service, the state department of public health was interested, and an epidemiologist from that organization participated in the study. The problem held interest, too, because of the fact that previous outbreaks had occurred and the source of infection had never been determined.

Seventeen men of a total of forty-one who were working at both ends of the tunnel were affected during the afternoon of Aug. 6, 1932. The period of incubation was approximately three hours as a minimum, and the characteristic signs of nausea, vomiting, abdominal distress and mild diarrhea were manifest. All forty-one men, working in two groups, had been fed the

From the Department of Public Health.
Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 16, 1933.

same menu, and all the food came from the camp kitchen under similar circumstances. The seventeen affected were distributed in both groups. One man of the seventeen died, but autopsy showed the cause of death to have been, primarily, carcinoma of the stomach.

Epidemiologic data pointed toward the roast beef of a menu including the following items: pink beans, roast beef and gravy, boiled tongue with horseradish, boiled potatoes, boiled cauliflower, hard boiled eggs, bread and butter, peach and apple pies, iced tea, and coffee. The milk and water supplies are subject to frequent inspection and bacteriologic study, and there had been no recent irregularities. Foods purchased for the camp come from quite well regulated sources. The kitchen and store-rooms were satisfactorily conducted, clean and in good condition. On questioning those affected, the impression was consistently directed toward the roast beef. Specimens of some of the other foods were obtainable, and these were sent to the laboratory together with samples of the beef.

Laboratory studies were carried out on these specimens of food and on a few stool specimens submitted by those in whom diarrhea was present. In each instance there was a negative report for organisms that could be held responsible for the outbreak, except in the roast beef, in which *B. enteritidis* was found. (A test of a specimen of the uncooked meat, from the hind quarters, was negative.)

The beef was traced through the broker in San Francisco to an abattoir in the lower Sacramento Valley. The kill from which the beef in question came included forty-seven cattle killed, August 3, of which thirty-five were sent to San Francisco and four of these to the Hetch Hetchy camp. Of the total kill, four carcasses were rejected because of tuberculosis, and several livers because of abscesses. (The type of organisms in the abscesses were not studied.) The animals killed were further traced to one dairy ranch, where infection was not found either by the state department of agriculture or by our own veterinarians. The San Francisco broker's establishment was found to be satisfactory and clean.

The source of infection was not definitely determined, although it is quite certain that the roast beef was the responsible food. The meat could have been infected, of course, during the preparation of the carcass in the abattoir; it is not impossible that the contamination could have occurred in transit or in the broker's store-rooms; negative stool specimens of the food handlers at the camp would appear to eliminate these as a source of the contamination. The organism frequently seems to be present in localized areas of distribution, and this is the only explanation offered as to why less than half of the men were infected. Although stool specimens from some of those affected were negative, the positive finding of *B. enteritidis* at autopsy in the one death is supportive evidence of the source of the outbreak.

AN OUTBREAK PROBABLY DUE TO *BACILLUS* *PARATYPHOSUS* B

On Monday, Aug. 8, 1932, telephone complaints were received from several persons to the effect that they had been ill following the eating of lunches at a Market Street eating establishment. Epidemiologic investigation showed that ten people were known to have been affected over a period of forty-eight hours with an illness manifesting itself through nausea, vomiting, abdominal distress and, in some instances, a mild diarrhea. Fever, headache or severe signs of gastro-intestinal irritation, infection or intoxication were not present in any of the reported cases. Epidemiologically, no single food could be held responsible, for those concerned had not been affected on the same day, from the same meal, or from the same menu. The items involved included fresh pork, ham and turkey sandwiches, and tomato (chilli) sauce.

Laboratory studies were made on specimens of the foods suggested by the epidemiologic data, particularly the turkey, which had been prepared, August 3 (five days before), and the tomato (chilli) sauce, since these two were the items most frequently involved. Stool specimens were obtained from those affected in the few instances in which diarrhea was present at

the time of the investigation, and from all employees of the restaurant. *B. paratyphosus* B was obtained from the sauce and from the turkey, but this organism was not recovered from any of the stool specimens submitted. From the stool specimen of one employee, a young woman who disappeared before subsequent specimens could be obtained, an organism similar in cultural characteristics was isolated, but the agglutination reactions were inconclusive.

The explanation of this outbreak is not complete. There was no evidence of infestation of the premises with rats or mice, and no virus was used in rodent control measures. The turkey was contaminated, and, in being kept over a period of several days on a steam table, afforded a good medium under a favorable environment for bacterial growth. Whether the young woman was a carrier, and thereby contaminated the food, cannot be definitely stated. She denied having had any previous illness simulating typhoid or any other enteric fever. Her disappearance prevents further inquiries which might clarify the source of infection. A follow-up on the ten persons affected for possibilities of the development of paratyphoid fever showed nothing noteworthy.

AN OUTBREAK PROBABLY DUE TO *STAPHYLOCOCCUS*

Late Friday afternoon, Aug. 26, 1932, telephone reports were received from the Central Emergency Hospital (under the director of public health, and an integral part of the department of public health), informing us of rather severe food poisoning in two school children. The chief of the division of food inspection left the administration office within a few minutes to begin the investigation. Within an hour several other cases were reported from other parts of the city, and within twenty-four hours the list had increased to thirty. All proved later to have had the same source of infection. The group included school children, a few teachers and several parents. They were distributed not only through different sections of San Francisco but also in the transbay cities of Oakland and Berkeley.

The determination of the probable source of infection was not difficult. Epidemiologically it was definitely in chocolate éclairs, and when individual purchases were checked it was found that a single bakery establishment in San Francisco was responsible.

In several instances, éclairs of the same shipment were still available in the retail shops, and these were taken for laboratory investigations. Contamination was heavy, and the main contamination was found to be a heavy yellow pigment-producing staphylococcus. Pure cultures of this strain were fed white mice, with death resulting in five hours. It is believed that the staphylococcus, present in such great numbers, producing a heavy yellow pigment and a gastro-intestinal irritant poison, was the probable cause of the outbreak.

The bakery in which the éclairs were prepared was found to be insanitary in certain respects, particularly as to general cleanliness. Several cats had access to the inside rooms through broken screens. The cream filling was prepared during the late evening and early morning hours, and the éclairs were allowed to "mature" for three hours (from 3 to 6 a. m.) on racks and flat pans openly exposed in the warm room before distribution. The major portion of 176 individual éclairs were delivered between 6 a. m. and 12 noon to small shops in San Francisco, but a considerable portion, apparently, also were distributed in the East-Bay area. A small portion of the original lot were recovered. The bakery was closed, pending laboratory reports. Permission to reopen was granted only after complete renovation and remodeling to the satisfaction of the director of the bureau of food and milk.

It is a conjecture whether the cream filling was contaminated by a human or by an animal carrier, or whether the component ingredients (powdered eggs, powdered milk, sugar, shortening and flavoring) were contaminated. This possibility, however, is unlikely, since specimens were negative bacteriologically.

Here again is an example of an outbreak quite definitely confirmed bacteriologically after conclusive epidemiologic data, without the revelation of the actual source of infection.

INVESTIGATIVE PROCEDURES

The investigations of food poisoning outbreaks involve two general methods; namely, epidemiologic and laboratory procedures.

The epidemiologist, after confirming the diagnosis, is interested in the source of the infection, and he directs his attention toward the uncovering of all possible data related to that source of infection. Careful questioning of several of the individuals affected will reveal the article of food probably responsible. Interest then centers about this particular food, its source, its preparation, holding and serving, the food handlers themselves, the physical environment in which the preparation was carried out, the possibility of rodent infestation and rodent control measures, and other factors as these data might suggest. Epidemiologic procedures, while it is desirable to have them carried out by a medically trained personnel, may be carried out effectively by laymen or public health nurses, provided these persons are properly trained in the rudiments of epidemiology, which includes the important art of intelligent questioning. With good epidemiologic study, bacteriologic procedures may be minimized and, indeed, they should be but secondary and confirmatory.

Laboratory studies should be guided by the results of epidemiologic reasoning and, therefore, concentrated on the foods suspected on that basis. While certain chemical analyses may be indicated, the problems most frequently met will require only bacteriologic studies. Standard methods and routine procedures are valuable as time-saving steps, but these methods must be flexible to be adaptable to individual problems and may be improved from time to time as it is determined that certain refinements of technic are advantageous, as, for instance, enriched mediums, more suitable p_H , a change in buffer salts, and the use of chambers affording lower gas tension.

Emphasis should be placed also on the importance of proper specimens and their care from the time they are obtained until the laboratory studies are begun. The sterile containers should be contaminated only by the food specimens and then removed to the laboratory with the least possible delay. Bona fide stool and urine specimens from suspected human carriers should be fresh, in sterile containers and obtained under the most favorable circumstances, after catharsis in the former if necessary.

No bacteriologic study is complete without serologic reactions as a final check in the identification of the organism; animal, particularly white mice, or human, feeding is to be encouraged as a valuable adjunct.

PRACTICE IN MAJOR CITIES

The routine investigation of reported cases and outbreaks of food poisoning in San Francisco is a responsibility of the bureau of food and milk. The epidemiologic study is carried out by lay inspectors of the division of food inspection, under the immediate supervision of the chief of the division. Through the director of the bureau, close coordination is had with the personnel of the division of pasteurizing plant inspection, which includes a physician who handles also the examination of certain food (shellfish) and milk handlers. In especially difficult problems, the bureau of com-

municable diseases, division of epidemiology, aids in the study. Reports are made out in triplicate, one copy being forwarded to the Bureau of Communicable Diseases, and one to the assistant director of public health, who coordinates the bureaus and divisions concerned, including the department laboratories. The greatest difficulty in such a method of procedure lies in training the lay personnel in epidemiologic reasoning, but, over the period of several months that the plan has been in effect, definite improvement has been noted in the scope of the reports made by the inspectors.

It was of interest to us to learn of the methods used by other cities. To obtain authentic information, a letter of inquiry was addressed to the public health authorities in a group of major cities, and replies were received from Los Angeles, Chicago, Baltimore, Milwaukee, Buffalo, Philadelphia and Pittsburgh. The data submitted by these metropolitan departments of public health are noteworthy.

The information requested included six factors:

1. The number of food poisoning outbreaks recorded by years for a five-year period, 1928-1932.
2. The number of food poisoning outbreaks proved bacteriologically, by years, for the five-year period 1928-1932.
3. The names of the types of organisms isolated.
4. Were any animals (particularly rats and mice) connected with the outbreaks?
5. Were human carriers connected with the outbreaks?
6. What division of the department of public health is charged with the investigation of outbreaks?

The replies from Philadelphia and Pittsburgh show that there were no outbreaks recorded in these cities during the five year period. In the former, the investigation of outbreaks is the responsibility of the division of communicable diseases and sanitation (it is not stated whether this division includes the usual food inspection activities), while in the latter, the division of food inspection carries out the studies. Buffalo reports no outbreaks recorded in this period and makes no statement concerning the responsibility of investigation. Data furnished by Baltimore, Chicago and Los Angeles are sufficient for more detailed comment.

In Los Angeles, during the years 1928-1932, there were recorded, by years, 56, 93, 73, 100 and 138 outbreaks, of which, respectively, 23, 70, 48, 81 and 49 were proved bacteriologically. The organisms isolated, and probably responsible, were identified as: "Gram-positive diplococcus, enterococcus, staphylococcus, *S. enteritidis*, *Sh. Dysenteriae* (Flexner type), *S. Schotmulleri*, and Gram-negative diplococcus." It was stated that rats were suspected as carriers of *B. paratyphosus*, "which caused symptoms of mild enteritis." In the entire series of more than 450 outbreaks, in but seven instances were human carriers "positively determined" as responsible factors. Investigations are conducted by the Division of Sanitary Inspection, aided by district physicians. A new set-up with one of the assistant health officers at the head, who is chief of all food inspections and investigations, is being tried at the present time.

In Chicago, the outbreaks reported during the same five-year period, by years, were 48, 111, 60, 123 and 68. The number of outbreaks proved bacteriologically, however, was very much smaller: 0, 2, 0, 0 and 1. The organisms isolated included "*B. welchii*, *B. botulinus*, *B. dysenteriae* (Flexner type)." In none of the instances recorded was there proof of contamination of

food by rats or mice. In one instance *B. dysenteriae* (Flexner) was the human carrier found to play a rôle. Investigations are carried out jointly by the bureau of food and the bureau of medical inspection.

In Baltimore, reported outbreaks were few during the five year period, the numbers by years being 2, 2, 2, 5 and 4. Of these, 2, 0, 1, 1 and 2 were proved bacteriologically. Organisms isolated and believed responsible included "salmonella-like types, enteritidis-like types, and cloacae-like types." No outbreak was traceable to rats or mice, but in two instances it was believed that human carriers (salmonella-like type and cloacae-like type) were responsible. The investigations of food poisoning as carried out since 1931 are conducted by a food poisoning team composed of a physician (department epidemiologist), a bacteriologist (director of the bureau), a chemist (chief of the division), and a food inspector, all coordinated under the direction of the epidemiologist and director of the bureau of food control.

The Milwaukee Department of Public Health reported outbreaks during the five year period by years as 0, 2, 2, 2 and 5; bacteriologic proof was made in the same numbers: 0, 2, 2, 2, and 5. In these eleven outbreaks, the organisms found to be present and believed responsible included "*Aerobacter cloacae*, *Staphylococcus aureus* and *Staphylococcus albus*." Animals were believed to play a rôle in none of these instances, but, "in some cases, organisms [were] isolated from bakery equipment, nail scrapings, and feces" obtained from workers presumably classified as human carriers. The investigation of food poisoning reports in Milwaukee is the responsibility of the bureau of laboratories.

In a communication supplementing the questionnaire, the director of the bureau of laboratories of the Milwaukee Health Department states that the information submitted in the questionnaire referred only to outbreaks, and it is pointed out further that during the same five year period the department investigated 21, 25, 30, 25 and 43 instances reported, in each of which from 1 to 300 persons were involved. In these groups, the instances proved bacteriologically numbered 0, 5, 7, 8 and 8, with the aforementioned organisms believed responsible. In certain other instances, chemical or metallic poisons were found to be present and were held to be responsible for the symptoms and signs presented.

THE CONTROL OF FOOD POISONING

The so-called control of food poisoning demonstrates very positively the existence of the gap between what can be done and what is done. It is undoubtedly true that the reported incidence of food poisoning is only an index of the actual occurrence. The condition is definitely preventable, as are diphtheria, smallpox, typhoid and trichiniasis, but these also continue to occur. The incidence of many of the preventable diseases is lower than ever before, and public health practices have been responsible in a large measure for these reductions; but in the present stage of development and practice, the word "control" should be used advisedly.

By what means and methods may food poisoning be controlled by the public health agency? There are three main avenues of approach: 1. The regulation and supervision of food handlers; this involves police methods, which are not desirable, and medical supervision and examination, which too frequently degenerate to a venereal disease inspection service rather than a search

for the "bacillus carrier." 2. Intelligent food inspection service; this method of attack, while important, offers little in the way of adequate protection unless there is included in the inspection certain supervision over methods and adequacy of preparation and cleanliness of handling, holding and serving and, particularly, evidence of rodent infestation and rodent control measures. Food inspection that offers the maximum of service must include more than a cursory inspection of the physical plant. 3. Education of the general public; it is only through health education and the development of the preventive attitude in the population at large that any real control of food poisoning may be accomplished. While it is important that there be an organized health education program developed in every public health agency, it is essential that every member of the personnel take advantage of his many opportunities to teach prevention.

SUMMARY

1. Food poisoning is defined as that clinical syndrome resulting from the ingestion of food contaminated by organisms of a specific type, including the paratyphoid-enteritidis groups and certain of the staphylococci.

2. Three outbreaks, investigated by the San Francisco Department of Public Health, are reported. The first was believed to have been due to meat (beef) contaminated by *B. enteritidis*; the second was caused, in all probability, by tomato sauce and turkey contaminated by *Bacillus paratyphosus* B; the third was probably due to the cream filling in chocolate éclairs, contaminated by a heavy yellow pigment-producing staphylococcus.

3. Investigative procedures are outlined, with emphasis on the rôles played by epidemiology and the laboratory. Practices carried out in San Francisco are compared with those of other major cities, as determined by questionnaire methods.

4. The control of food poisoning is not an unachievable goal, but present-day methods must be more intensively and extensively applied. Three avenues of approach include: (a) supervision of food handlers (human carriers), (b) food inspection service (physical plant, methods of preparation, holding and serving and regulation of rodents and other animal carriers), and (c) health education through an organized program and personal contact of the departmental personnel and the public.

CONCLUSION

The continued occurrence of food poisoning presents a challenge to students of public health and preventive medicine. Modern understanding of the etiology and epidemiology of this preventable disease provides foundations for intelligent public health administration and actual control. This presentation of the problem is justified because of the need for renewed interest in its epidemiology.

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ABSTRACT OF DISCUSSION

DR. JOHN P. KOEHLER, Milwaukee: In Milwaukee, during the last few years, there have been several outbreaks of food poisoning. In April, 1929, an outbreak occurred involving more than a hundred people. It was first discovered when twenty or more patients arrived one evening at the city emergency hospital suffering from nausea, cramps, diarrhea, vomiting, clammy skin and rapid pulse. Every patient had eaten

some cream-filled pie from two to six hours previously. The pies responsible for the poisoning had been baked by one large pie concern. Careful examinations were made of employees at the pie factory as well as those working in establishments that supplied the raw materials to the bakery. After weeks of intensive laboratory investigation, it was established that the causative agent of the poisoning was the organism *Aerobacter cloacae*. The bakery was in the habit of preparing its cream filling in huge kettles and allowing them to stand and gradually cool until placed in the pies in the afternoon. The filling made a very favorable medium for the bacterial growth and this favorable environment was further enhanced by maintaining the mass for a considerable period of time close to body temperature. The pie factory was ordered to sterilize all equipment and interior surface with live steam and to discontinue the practice of holding the cream filling, but instead to fill the pies immediately after the preparation of the filling. During the years 1931 and 1932, several other outbreaks occurred, which were traced to the products of five different bakeries. The organisms isolated were *Aerobacter cloacae* and *Staphylococcus aureus*. The Milwaukee Health Department drew up a set of rules for the handling of custard products, which were presented to the Milwaukee bakers and accepted by them. These rules emphasize the importance of proper cooking of all custard and cream products, the sterilization of all equipment and utensils, and aseptic handling of the fillings as well as the products to be filled. Although food poisoning cases may be more common during warm weather, the outbreaks in Milwaukee occurred mostly during the winter and spring months.

DR. J. C. GEIGER, San Francisco: Recently a definite poisoning outbreak occurred from lead arsenic in string beans purchased in the open market. Laboratory examinations showed 11.7 mg. of lead per hundred grams of string beans.

HEREDITARY GAUCHER'S DISEASE

J. P. ANDERSON, M.D.

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Gaucher's disease, according to the present conception, may be defined as a nonhereditary congenital familial disease due to disturbed lipid metabolism with the production of an abnormal substance (kerasin). This is stored by histiocytes of reticulo-endothelial origin, giving rise to the typical Gaucher cell, which is found in all tissues, chiefly the spleen, lymph glands, liver and bone marrow, in which reticulo-endothelium is present.

Clinically, the disease is characterized by splenomegaly, hepatomegaly, pigmentation of the skin, pin-guecula-like thickenings of the ocular conjunctivae, hemorrhagic diathesis, unique changes in the bones with discrete or confluent rarefactions, leukopenia, anemia of the hypochromic variety, thrombocytopenia, and in infants there may be a preponderance of neurologic symptoms.¹

Lymphadenopathy is seldom encountered, although it occurs at times, and diagnosis has been made in some instances from an inguinal gland removed at biopsy.¹ Ascites seldom occurs. Pain in the form of a dull ache is fairly common over the splenic area and vague aches and pains may occur over various parts of the skeletal system. Occasionally this is a major complaint, as in a case reported by Cushing and Stout.²

The signs and symptoms vary. About the only constant finding is an enlarged spleen and the others may or may not be present. Brill, Mandelbaum and Libman,³ in 1909, felt that a pin-guecula was a constant finding, but it has been mentioned in only fourteen of the eighty-nine cases summarized by Hoffman and Makler in 1929.¹

The onset of Gaucher's disease is insidious. There is usually no sign of it at birth; the children are well developed and nourished and the first intimation of the illness may be the discovery of an enlarged spleen during a routine examination. The age at onset or first discovery varies from birth to 32 years.

The course of the disease may be acute in children, but it is usually chronic in adults. The condition usually is slowly progressive, but the patient may live for twenty years after the disease has been detected. Death is often caused by some intercurrent disease.

The spleen may reach immense proportions, one weighing 8,100 Gm. having been reported by Brill, Mandelbaum and Libman,³ but in other cases the spleen has weighed less than 100 Gm.

The disease is familial. Collier,⁴ in 1895, reported its occurrence in more than one member of a family, and Pick⁵ stated that there was a familial incidence in more than one third of the cases reported up to 1926. As many as four cases have been reported in one family.⁶ In no reported instance has either of the parents suffered from the disease, nor has it been transmitted from any adult to a child.¹

I have investigated the history of a Russian family in which there is a possibility of hereditary transmission of Gaucher's disease. Some of the history is incomplete, but, since there are no instances of hereditary transmission reported in the literature, the clinical history of this family is reported in the hope of stimulating a thorough study to the third generation of families in which instances of Gaucher's disease have occurred. The incidence of the disease in this family is shown in figure 1.

There were nine children in this family. The paternal grandmother died at the age of 22. It is reported that she and two of her sisters had large abdomens and a yellowish brown discoloration of the skin and died of a common cause.

The son of this woman, the father of my patients, died in 1931, aged 55, of myocardial insufficiency, emphysema and chronic bronchitis. He was in the hospital twice, and these records show no evidence of enlargement of the spleen. He had one brother and one sister about whom there is no available history. The mother is now living, aged 57. She is of the short, stout type and has early hypertensive heart disease but is well otherwise. The spleen is not palpable.

This couple had nine children, of whom three are dead. One daughter died of measles at the age of 1½ years. One daughter died at 6 years. She had a very large abdomen and a pale greenish yellow color. One daughter died when she was 17; she had a large abdomen, a brownish yellow discoloration of the skin and a large spleen, which was removed by the late Dr. C. A. Hamann. There was much ascites and the peritoneum was studded with tubercles, but the pathologic report of the spleen was Gaucher's spleen. She died three months later in a sanatorium after having developed extensive pulmonary tuberculosis.

3. Brill, N. E.; Mandelbaum, F. S., and Libman, Emanuel: Primary Splenomegaly of the Gaucher Type: A Report on the Second of Four Cases Occurring in a Single Generation of One Family, *Am. J. M. Sc.* 137: 849-857, 1909.

4. Collier, William: Case of Enlarged Spleen in a Child Aged 6, *Tr. Path. Soc. London* 46: 148-150, 1894-1895.

5. Pick, Ludwig: Der Morbus Gaucher und die ihm ähnlichen Erkrankungen (Die lipoidzellige Splenohepatomegalie Typus Niemann und die diabetische Lipoidzellenhyperplasie der Milz), *Ergebn. d. inn. Med. u. Kinderh.* 29: 519-627, 1926.

6. Oberling, C., and Woringer, P.: Le maladie de Gaucher chez le nourrisson, *Rev. franç. de pédiat.* 3: 475 (Aug.) 1927.

Read before the Section on Practice of Medicine at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

1. Hoffman, S. J., and Makler, M. L.: Gaucher's Disease: A Review of the Literature and Report of a Case Diagnosed from Section of an Inguinal Lymph Gland, *Am. J. Dis. Child.* 38: 775 (Oct.) 1929.

2. Cushing, E. H., and Stout, A. P.: Gaucher's Disease, with Report of a Case Showing Bone Disintegration and Joint Involvement, *Arch. Surg.* 12: 539 (Feb.) 1926.

Three sons and three daughters survive. The sons' ages are 41, 26 and 19 years. None show any splenic enlargement, skin discoloration or other signs of Gaucher's disease. The son aged 41 has four children, all apparently healthy, and the son aged 26 has one child 5 weeks old, also healthy. The third son, aged 19, is not married.

All three of the living daughters have a pale yellowish brown discoloration of the exposed skin and two of them have many acne pustules. One daughter, who is 24, shows no signs suggestive of Gaucher's disease unless the fact that the color of her skin, which is like that of her two sisters, can be of significance. Her spleen is not palpable and no enlargement can be detected by percussion. One daughter, single, aged 21, has an enlarged spleen. Her history is as follows:

She was the eighth child in the family of nine. She had a bad attack of measles in childhood and has had earaches and nosebleeds frequently. She has had attacks of vomiting about twice a month. There was no history of rheumatism, infectious fevers or frequent colds. The patient was severely troubled with constipation. The menstrual cycle was normal. She had been examined in 1927 and had been told that her spleen was enlarged about 1 inch. She was 5 feet (152.4 cm.) tall and weighed 105 pounds (47.6 Kg.). The temperature, pulse rate and blood pressure were normal. The patient's complexion was a sallow yellowish brown, with acne spots on the face and back. The pupils were equal and reacted normally,

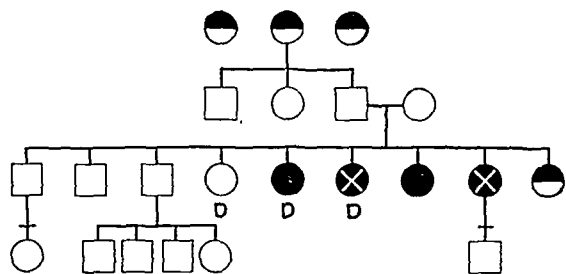
illness and no operations. At the age of 17 years, a painless lump had appeared in the left groin and had remained until after her confinement at 21, after which it disappeared and never returned. About the fifth month of pregnancy, in April, 1920, burning pains suddenly developed in the left side of the abdomen and back, which were so severe that morphine was required for relief. A roentgenogram was made and she was told that her condition would require an immediate operation. This she declined, and later she consulted Dr. Hamann, who had previously operated on her sister; he told her that she had an enlarged spleen and should leave it alone. In 1921 she consulted another physician, who advised roentgen therapy, and from then until the time I first examined her, in September, 1932, she had had about two courses of radiation over the splenic area each year, a course representing three treatments. She felt that the treatments relieved an aching pain which occurred intermittently in the left side, but she always became pale and weak afterward.

In September, 1932, she consulted Dr. J. H. West, radiologist, requesting more roentgen treatments. He declined to administer them until she had had an examination, and hence she was referred to me for study. Her complaints were aching in the left side, vague pains throughout the body, asthenia and exhaustion. She also had attacks of sick headache about twice a month, which usually lasted two or three days. Her appetite was fair; there was no gas nor belching. The menses were normal.

The patient was 5 feet (152.4 cm.) tall and weighed 114 pounds (51.7 Kg.). The temperature and pulse were normal and the blood pressure was 108 systolic, 78 diastolic. The patient was fair complexioned with a bilateral area of pigmentation resembling a large freckle about 2 inches by 1 inch over each mandibular area. There was also some generalized increase of pigmentation of the exposed parts of the body. The pupils were equal and reacted normally, and no pinguiculae were detected. Examinations of the ears, nose and throat showed no abnormality, and there was no thyroid nor lymph glandular enlargement. The heart and lungs seemed normal. The abdomen presented an asymmetrical appearance with an obvious mass in the left side. This extended to about 2 inches below the umbilicus with a palpable splenic notch just under the umbilicus. The liver was enlarged, being palpable 1 inch below the costal margin. This was slightly tender but the spleen was not. There were no masses nor tenderness elsewhere and no evidence of ascites. There were no enlarged glands in the left groin. The pelvic and rectal examinations gave negative results. The reflexes and the results of motor and sensory tests were negative. No evidence of any endocrine disturbance was observed.

The patient was unaware of the diagnosis of Gaucher's disease in the case of her sister and was under the impression that she herself was receiving the roentgen treatments for leukemia, so that the differential diagnosis had to be made considering (1) congenital hemolytic icterus, (2) Gaucher's disease, (3) Banti's disease and (4) chronic myelogenous leukemia. Examination of the blood showed red blood cells, 4,140,000; hemoglobin, 80 per cent of normal; white blood cells, 3,900. The differential count showed polymorphonuclear leukocytes, 60 per cent; lymphocytes, 30 per cent; monocytes, 2.5 per cent; degeneration forms, 3.1 per cent; eosinophils, 2 per cent, and basophils, 3 per cent. The cell volume was 80 per cent of normal; the color index, 0.96; the volume index, 1; the sedimentation rate, 30 mm. in one hour; the icterus index, 4. Unstained cells suspended in saline solution appeared normal under the microscope. The fragility of the red corpuscles ranged from 0.34 to 0.44 per cent. The gastric analysis after the Ewald test meal showed 20 units of free hydrochloric acid and 35 units of total acidity. The blood cholesterol was 160 mg. per hundred cubic centimeters. The urinalysis showed a trace of albumin but was otherwise negative.

The fragility test ruled out the presence of hemolytic icterus, and the blood counts ruled out leukemia. After these examinations were made, I obtained the history of the sister's operation, with the pathologic diagnosis of Gaucher's disease, and it seemed very probable that this patient's condition was similar.



□ - Male ○ - Female D - Dead.

● Possible Cases ● Probable Cases X Proved Cases.

Fig. 1.—Incidence of Gaucher's disease in a Russian family.

and the conjunctivae showed no pinguiculae. The teeth and tonsils were normal and there was no thyroid or lymph glandular enlargement. The heart and the lungs appeared to be normal. The liver was palpable with inspiration just below the costal margin; the spleen was palpable 2 inches below the costal margin, and a splenic notch was distinctly palpable. There were no other tender masses. The reflexes were normal. There were no tender areas over any of the bones, and there was no evidence of any endocrine disturbance.

The erythrocytes numbered 4,820,000, with the hemoglobin 82 per cent of normal; there were 6,450 leukocytes. The differential blood count showed polymorphonuclears, 51 per cent; lymphocytes, 39 per cent; endothelial cells, 3 per cent; eosinophils, 5 per cent, and basophils, 2 per cent. The volume of packed cells was 93 per cent of normal. The color index was 0.85 and the volume index, 1.1. The erythrocyte sedimentation rate was 17 mm. in one hour. The icterus index was 3. The bleeding time was normal and the clotting time was two and three-fourths minutes by the glass capillary method. I had hoped to be able to report on cell smears obtained by splenic puncture but was unable to get the patient's permission. Nevertheless, in view of the family history, I believe that her condition is due to Gaucher's disease.

The oldest living daughter, aged 33, has an enlarged spleen and by splenic puncture it has been proved to be due to Gaucher's disease. She is married and has one son living, aged 12. She had a miscarriage during her second pregnancy. A serious fever when the patient was 2 years of age was said to have almost cost her her life. There had been no other

I then did a splenic puncture and examined smears stained by Wright's stain and found many Gaucher cells present; these were large, and often multinucleated. One cell contained nine nuclei (figs. 2 and 3). Roentgenograms were made of some of the bones but they showed no abnormality.

In March, 1933, the patient's left knee suddenly became sore and she started having nosebleeds every day. On examination, there was tenderness along the internal surface of the knee joint and also about 2 inches below the joint. At that time the blood count showed 3,580,000 erythrocytes with the hemoglobin 79 per cent and 2,800 leukocytes.

Since Potter and McRae⁷ had recently reported an apparent remission in a case of Gaucher's disease following the administration of liver extract, I prescribed liver extract daily.

The patient reported in May after she had taken this for two months. She said that she had had no epistaxis for one month but had one bad uterine hemorrhage for one day. This occurred five days after cessation of her regular menstrual period. Examination revealed a beginning ocular conjunctival thickening which was not present on the previous examination in March. The nails were very brittle and showed marked cracking and splitting of the tips in spite of splendid care. The spleen now extended $3\frac{1}{2}$ inches below the umbilicus, and the right lobe of the liver extended to the level of the umbilicus. The red blood cell count was 3,190,000; the hemoglobin was 76 per cent of normal and the leukocytes numbered 2,750, with the differential count showing leukocytes, 70 per cent; lymphocytes, 32 per cent; monocytes, 7 per cent; eosinophils, 1 per cent and basophils, 1 per cent. These observations indicate that there has been a progressive enlargement of the spleen and liver and also progressive leukopenia and anemia in spite of the liver extract. Whether the anemia would have been any greater if she had not taken any liver extract is uncertain, but there was a steady progression of the disease, as contrasted with Potter and McRae's⁷ report of an apparent remission following the administration of liver extract.

I also examined this patient's son, aged 12 years. The parents had been told on one occasion that he had an enlarged spleen, but this was not confirmed at any subsequent examination and I could find no evidence of it either by palpation or percussion. The child's erythrocyte count was 4,800,000; the hemoglobin was 102 per cent, and the white cells numbered 7,800. He exhibited no suggestive signs of Gaucher's disease.

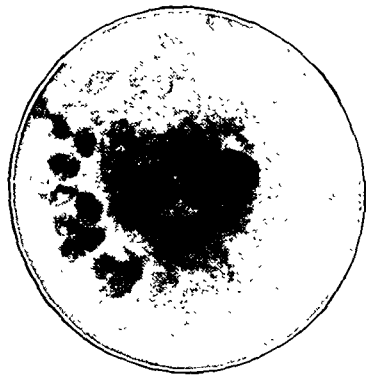


Fig. 2.—Gaucher cell; $\times 1,250$.

case was established with tuberculosis as an intercurrent and terminal infection.

Of the two living members exhibiting the disease, one has been proved by splenic puncture to have many Gaucher cells.

Liver extract administered for eight weeks to one patient with Gaucher's disease had no apparent effect in the early progression of the disease, anemia.

The presence of a similar condition in the maternal grandmother and two of her sisters has been reported but cannot be proved.

7. Potter, E. B., and McRae, C. C.: Gaucher's Disease: Report of Two Cases, with a Remission in One Following Administration of Liver Extract, *Am. J. M. Sc.* 185:92-96 (Jan.) 1933.

The possibility of hereditary transmission through a male donor who himself never showed any evidence of the disease suggests that the family histories of patients with Gaucher's disease should be followed through the second and third generations.

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ABSTRACT OF DISCUSSION

DR. NORBERT ENZER, Milwaukee: The familial nature of Gaucher's disease is well known, but the transmission of the disease through a family has not been described until now. Racial distribution was at one time considered of significance, but the literature indicates a widespread geographic distribution. The disease may appear at any age. I have seen an instance of Gaucher's disease at the age of 4 and two instances in the sixth and seventh decades. One cannot help but be impressed with the peculiarly selective type of cell involvement. One must further be impressed by the essentially benign nature of the cells characteristic of this disease. Investigations into tissue metabolism justify the belief that the condition is Gaucher's disease

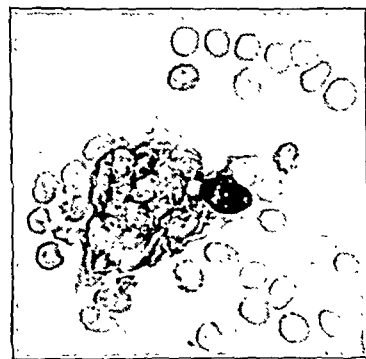


Fig. 3.—Gaucher cell, showing reticulation of protoplasm.

with an essentially intrinsic cell disturbance, a disturbance of internal cell metabolism. The origin of the cells from reticulum cells in contrast to sinus endothelium has been emphasized. I have seen in only one case, and in very few sections in this one instance, cells arising from endothelium, so it may have to be considered that occasionally the Gaucher cells arise from endothelium. Hematologic observations in Gaucher's disease are hypochromic anemia and leukopenia. The anemia occasionally responds to liver therapy. That leukopenia is characteristic will have to be changed, because I have seen three cases now in which not only was leukopenia not present but, on the contrary, a rather marked leukocytosis. In one instance the leukocytosis was associated with abdominal lymphadenosis, which could not be distinguished from lymphatic leukemia. The portal cirrhosis occurring in Gaucher's disease has not received sufficient attention; it may bear an important relationship to the anemia. In the autopsy reports on Gaucher's disease the examination of the brain has been neglected. In view of the relationship of Gaucher's disease to lipid metabolism, important changes may be present in the brain. Disturbances of the organs of internal secretion are frequent. One sees cases of dwarfism, infantilism and genital dystrophies associated with Gaucher's disease.

The Size of the Granulopoietic Organ.—The subject of bone marrow as a hematopoietic organ means the consideration of the entire marrow as a unit. It is an organ of no considerable size, having been shown by Wetzel to have a volume, in the adult human being, of 1,419 cc., which is thirteen times that of the spleen and almost equal to that of the liver. . . . This means that the proportion of erythropoietic to granulopoietic tissue, as well as the proportions of the different levels of maturation within the two groups, is relatively constant. According to studies by Doan and Zerfas, in three accident cases the ratio of erythropoiesis to granulopoiesis was 1:20, 1:16 and 1:5.5. Other authors have given a ratio of 1:3. It can thus be roughly estimated that from three to twenty times more tissue is devoted to the production of granulocytes than to the production of erythrocytes, or, in other words, the volume of the granulopoietic tissue is from nine and one-half to twelve times that of the spleen.—Beck, Regena C.: Benign and Malignant Neutropenia, *Arch. Int. Med.* 52:239 (Aug.) 1933.

GROWING TUBERCLE BACILLI

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An acquaintance with the propagation of tubercle bacilli is the basis for conceptions regarding the pathogenesis of tuberculosis, and this can be expressed simply as the interaction of two components: the one, the tubercle bacillus—the offender—in its ability to persist and to develop in the animal body, and the other component—the host—the cells and fluids of the body which serve to harbor or nourish these bacilli to the point of offensiveness and destructiveness. The paradoxical nature of the pathogenic reactions of tubercle bacilli in different animal species leaves a great deal to be desired in the way of adequate explanation for the present, but suggests the taking of an inventory and revaluation of some of the experiences accumulated during the past few decades, especially concerning the growth and nature of tubercle bacilli under controlled conditions in the culture receptacle.

The fundamental investigations recently concerned with growing tubercle bacilli have resolved themselves into a number of definite practical achievements among which are included the elucidation of problems of: (1) refining and simplifying certified diagnostic methods; (2) preparing purer and better specific diagnostic and therapeutic substances, e. g., tuberculins and BCG; (3) preparing large amounts of bacilli for chemical and biologic studies and analyses; (4) simpli-

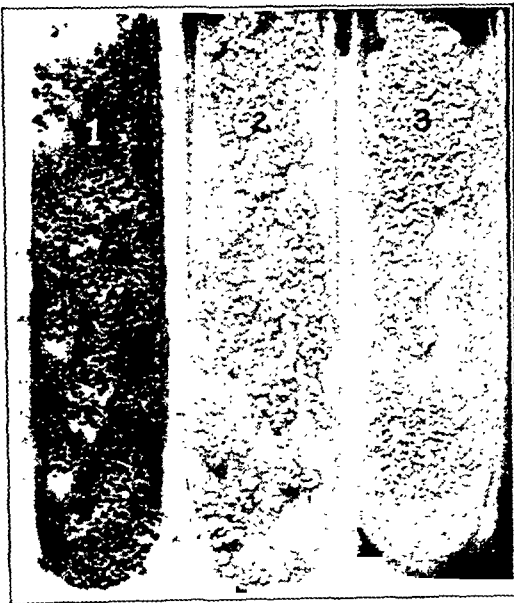


Fig. 1.—The growth of tubercle bacilli in heavy plantings on a poor nutrient medium, 0.5 per cent ammonium citrate agar. Tube 1 illustrates the growth following planting of small lumps of sputum 42 strain, a recently isolated virulent strain of human tubercle bacilli. Tube 2 illustrates the growth following the planting of small lumps and tube 3 that obtained by planting a fine suspension containing 5 mg. per cubic centimeter of another virulent laboratory (Gluckson) strain of human tubercle bacilli. The tubes illustrate the lowest plantings for these bacilli still yielding positive cultures after two months at incubator temperature.

fying and evaluating mediums for laboratory perpetuation and academic studies, and (5) perfecting and simplifying methods for the prolonged preservation of

strains for comparative studies and for standardizing purposes.

In considering these various achievements in growing tubercle bacilli, it is well to bear in mind that among the pathogenic tubercle bacilli of the human, bovine and avian varieties which are of common occurrence and can be adequately cultivated in the laboratory, there exist decided individual differences which characterize each strain. These are outstanding and



Fig. 2.—The results of graded plantings of a fine suspension of simulant human tubercle bacilli (Gluckson) in human tissue substrate (prepared with sulphuric acid and neutralized with isotonic sodium bicarbonate solution) placed on a poor nutrient (0.5 per cent ammonium citrate agar), after eight weeks' incubation. Note the multiple fine small colonies in the 1 mg. dilution per cubic centimeter (tube 1) and the gradation to the large solitary colonies in the 0.000,001 mg. dilution (tube 4). Note also the similarity to the results with guinea-pigs illustrated in 3 and 4.

allow satisfactory differentiation in the average case. Some of these differences are brought out in culture studies and are especially emphasized with quantitative plantings on a variety of mediums of different nutrient qualities for tubercle bacilli.

It is only too obvious that factors which appear hardly to merit consideration for rapidly developing micro-organisms loom important and striking for slow-growing forms like tubercle bacilli; so also does one find the reverse to be true, e. g., that in many instances the slower growers under certain conditions can adapt themselves to a wider range of apparent adverse conditions, and while death may be a ready criterion in judging effects on rapid growers, so crude a gage becomes almost worthless for determining the effect of nutrients or other substances on tubercle bacilli. Especially significant for the purpose of the interpretation of infective power and conditions of growth have been the results derived from graded quantitative plantings and injections into animals advocated and reported on by my colleagues and me, and recently reviewed in detail in a number of publications. In brief review, such graded quantitative studies have shown that 1 mg. of tubercle bacilli contains in round figures about one billion bacilli and that these bacilli possess a strikingly wide range of ability to utilize nutrients, from those starting with the simplest of synthetic chemical composition, when planted heavily by direct transfer of small bacillary lumps or masses, to those requiring the most complex of natural nutrients includ-

ing potato, animal blood and tissues and egg yolk. This range is well shown in table 1.

In addition to the wide range of growth ability displayed by tubercle bacilli, there is also the striking factor of the effect of heavy fine suspension planting as compared to light fine suspension planting as a determinant in the amount of growth on good nutrients and the similarity of the phenomenon in a highly susceptible animal like the guinea-pig. In the case of the heavy plantings with a fine suspension of tubercle bacilli mixed with a good nutrient like dog's blood treated with sulphuric acid (equal volume, 6 per cent), neutralized with sodium bicarbonate (1.3 per cent), and placed on an agar medium containing only salt buffers and ammonium citrate, the colonies become so numerous and fine that they are barely visible to the naked eye, while from light plantings individual colonies grow to considerable size. The same occurs in guinea-pigs infected either subcutaneously or intravenously with relatively large amounts of a fine suspension of a virulent strain of tubercle bacilli, some of the organs of these animals revealing multiple barely perceptible lesions, in some cases visible only microscopically.

TABLE 1.—Growth of Human Tubercle Bacilli on Different Mediums Dependent on the Quantity of Plantings

Medium	Strain Planted†	Amount of Bacilli in Milligrams Planted				
		Direct Transfer of Lumps	5.0	1.0	0.01	10 ⁻⁴
1. 0.5% ammonium citrate agar*	Gluckson Sputum 42	2 [#] 2	2 7	0 0	0 0	0 0
2. Asparagine agar medium (Long)	Gluckson	2	2	3	0	0
3. Ammonium malate agar (Henley and Le Duc)	Gluckson	2	2	3	0	0
4. Blood tissue substrate † on ammonium citrate agar	Gluckson Sputum 37	.. ..	.. ..	3 4	3 4	3 4
5. Potato cylinder or egg yolk	Gluckson Sputum 7	2 2	2 2	2 2	3 3	4 4

* The first three mediums which were prepared with laboratory chemicals are based on the buffered salt composition of Long's medium (Tubercle 6:128, 1924), consisting of: potassium acid phosphate, 3 Gm.; sodium carbonate, 3 Gm.; sodium chloride, 2 Gm.; magnesium sulphate, 1 Gm.; ferric ammonium citrate, 0.05 Gm.; glycerol, 30 Gm.; agar, 25 Gm., and water 950 Gm. To this is added 5 Gm. of ammonium citrate for the ammonium citrate medium (1) and in addition 5 Gm. of asparagine for Long's medium (2). Henley and Le Duc (Am. Rev. Tuberc. 22:568, 1930) used ammonium malate in place of the more expensive asparagine. The buffered ammonium citrate (1) is used as the buffered agar base on which the blood tissue substrate is placed in medium 4.

† The blood tissue substrate is prepared, according to directions already given,⁶ with sulphuric acid and isotonic sodium bicarbonate.

‡ Gluckson is a virulent laboratory strain of human tubercle bacilli while sputums 42, 37 and 7 are strains recently isolated from sputum.

The numerals given signify that a positive culture was obtained, and the number of weeks after which a macroscopic growth was first noted. The markings give no index of the amount of culture mass obtained on these mediums, but usually it is more voluminous on the asparagine and ammonium malate mediums than it is on the mediums better qualified to produce cultures from small plantings such as the potato, egg and tissue substrate. There is a difference between the ability to support growth from small plantings and the final volume or weight of bacillary mass on the different mediums for the same strain of bacilli.

Injections of higher dilutions of the same suspension of bacilli result in large solitary lesions. It would appear that the explanation of this phenomenon in vitro lies in an exhaustion of the medium as a nutrient by the bacilli, yet this may not be entirely adequate for the guinea-pig; and when heavy replantings are resorted to on the mediums already fully exhausted (?), as determined by the original plants, they occasionally grow in spite of the presence of the multiple fine colonies. These results are best seen in the accompanying photographs.

Another phenomenon concerned with the growth of tubercle bacilli is that of the dissimilar gross characteristics noted on excellent nutrients for the same strain of bacilli in spite of the fact that dilution titration tests prove all of these mediums capable of supporting the growth of small numbers of bacilli. For instance, recently isolated virulent human tubercle bacilli grow in fine veil-like fashion over the surface of inspissated human or dog blood, while on egg mediums the diffuse growth is more elevated, wrinkled and heavier, but not to the extent of that found on potato mediums, which is markedly elevated and sharply demarcated. The characteristic colony for the potato medium is developed on the egg by the addition of potato or potato flour before sterilization. The explanation of this would appear probably to be associated with the phys-



Fig. 3.—Photograph of a guinea-pig showing the small miliary type of organ tuberculosis eight weeks after the subcutaneous injection of a large dose (1 mg.) of a virulent strain (Gluckson) of human tubercle bacilli.

icochemical nature of these complex nutrients, although the exact nature is still in doubt after experiments performed by me for the purpose of explaining this. Various attempts to change the surface tension or osmotic pressure of these nutrients have met with little success in yielding decidedly dissimilar colonies.

Many of the phenomena concerned with the growth of tubercle bacilli on good nutrients in graded different suspensions, the different characteristics on the good nutrients such as potato, egg and blood and the relative nutrient qualities of the different mediums hold true for the usual recently isolated human, bovine and avian tubercle bacilli; but there are certain characteristics of these three different strains of bacilli which serve to distinguish them, aside from their pathogenicity for different animal species, which is usually used for practical differentiation.

The avian tubercle bacillus, so uncommon as a cause of disease in man, has recently attracted considerable attention as a reputed cause both of Hodgkin's disease¹ and of bacteremias in man,² merely because some of the well known facts regarding this micro-organism were not taken into consideration. Of the three pathogenic forms of tubercle bacilli considered here, the human, bovine and avian bacilli, the last-mentioned micro-organism, quite prevalent as a cause of spontaneous disease in birds and hogs, can readily be isolated from lesions with the aid of the ordinary good nutrient mediums used for tubercle bacilli. The avian tubercle bacilli isolated from diseased birds and hogs readily grow on sterile, glycerol-containing potato, egg and blood mediums, when present in small numbers, and



Fig. 4.—Photograph of a guinea-pig showing the large solitary type of organ tuberculosis (spleen) ten weeks after the subcutaneous injection of a small dose (0.000,001 mg.) of a virulent strain (Gluckson) of human tubercle bacilli. The relations shown in 3 and 4 pertain not only to virulent human tubercle bacilli but also to bovine tubercle bacilli in the guinea-pig and to avian bacilli in the rabbit and chicken.

they also grow well at incubator temperature (37 C.) on a 0.01 per cent gentian violet or crystal violet egg medium (Petroff), this amount of the dye retarding the growth of small numbers of human and bovine tubercle bacilli. The avian tubercle bacilli also grow more rapidly on these mediums than human and bovine bacilli. Their colonies are smoother, not so wrinkled and more rapidly spreading. The rate of growth and type of growth serve to differentiate them from human

and bovine bacilli. Suspensions in saline solution can be readily made from colonies of avian tubercle bacilli and can easily be grown when planted on good nutrients (potato, egg or blood mediums) in dilutions containing 0.000,000,001 mg. (table 2). So far as I am aware there is only one type of pathogenic avian tubercle bacillus. Whether the newer classification of smooth and rough colonies for this micro-organism will prove of practical differential value remains for more extensive investigations with recently isolated strains to disclose.

Next in order of ability to grow profusely on good nutrient mediums are the human tubercle bacilli. They grow more slowly than the avian bacilli, but like them their speed of growth on good nutrient mediums is dependent on the amount planted. In heavy plantings (from 0.01 to 1 mg.), it is not unusual to obtain a visible macroscopic growth within ten to twenty days, but a few bacilli (0.000,000,1 mg.) may require from eight to sixteen weeks at 37 C. for the appearance of macroscopic growth. Unlike avian tubercle bacilli the human bacilli cannot be as readily ground up in fine suspension, and the usual suspension can only be relied on to give consistent positive cultures in all tubes planted in dilutions down to 0.000,000,1 mg. By far the great majority of human tubercle bacilli are glycerophilic (require glycerin in nutrient mediums) and are fairly good growers (eugonic, Griffith³) when planted in small amounts on good nutrient mediums.

While the avian and human tubercle bacilli have well defined differential characteristics, lack of accurate detailed fundamental knowledge regarding the bovine tubercle bacilli leaves one in doubt whether the inability to grow bovine tubercle bacilli satisfactorily is due to the innate natural characteristics of the usual pathogenic strain just isolated from diseased tissues or whether it is due to inadequate knowledge regarding the nutrient requirements for this micro-organism.

TABLE 2.—Growth of Virulent Avian Tubercle Bacilli (Strain 7*) in Different Quantities on Various Nutrient Mediums

Medium	Amount of Bacilli in Milligrams Used for Planting the Culture Tubes					
	0.01	0.000,1	10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	10 ⁻¹⁰
Glycerol potato cylinder.....	3†	4	3	6	6	0
Inspissated glycerol egg yolk.....	3	3	3	5	5	0
0.01 per cent gentian violet egg (Petroff).....	3	3	3	4	4	0
Glycerol agar.....	4	0	0	0	0	0

* Strain 7 (avian tubercle bacilli) was a freshly isolated culture from chicken. The number of weeks after incubation at which the number of weeks after incubation at which the culture was positive. The table shows the poor nutrient or supporting the growth of small numbers of virulent avian tubercle bacilli and the fact that they can be readily grown from suspensions containing 0.000,000,001 Gm. of bacilli. The ultimate mass of culture obtained on the mediums is not considered in this tabulation, although this may be important in preparing biologic products.

Among the recently isolated bovine tubercle bacilli from cattle and hogs the majority are nonglycerophilic (glycerol being decidedly bacteriostatic to these strains) and dysgonic (Griffith),³ but about 1 per cent of them, in my experience, covering hundreds of culture isolations, are glycerophilic, and many of these are eugonic or become so after several transfers on good nutrient mediums. In extensive studies pursued with my colleague, Maurice L. Cohn, for the purpose of finding a better nutrient medium for the "dysgonic" bovine

1. L'Esperance, E. S.: Experimental Inoculation of Chickens With Hodgkin's Nodes, *J. Immunology*, 16: 37, 1929. Branch, Arnold: Avian Tubercle Bacillus Infection, With Special Reference to Mammals and to Man: Its Reported Association With Hodgkin's Disease, *Arch. Path.*, 12: 253 (Aug.) 1931. Medlar, E. M.: An Interpretation of the Nature of Hodgkin's Disease, *Am. J. Path.*, 7: 499, 1931. My attempts to isolate avian tubercle bacilli from several cases of fatal Hodgkin's disease were unsuccessful.

2. Corper, H. J., and Damerow, A. P.: The Question of Tubercle Bacilli in the Blood in Advanced Pulmonary Tuberculosis, *Am. Rev. Tuberc.*, 28: 118, 1933.

3. Griffith, A. S.: The Types of Tubercle Bacilli in Human Bone and Joint Tuberculosis, *J. Path. & Bact.*, 31: 875, 1928; Types of Tubercle Bacilli in Human Tuberculosis, *ibid.*, 32: 813, 1929.

tubercle bacilli, it was found that for purposes of isolation no entirely satisfactory medium was as yet available. In well controlled graded suspension tests with freshly isolated strains of nonglycerophilic bovine tubercle bacilli, the simple inspissated egg yolk medium (25 per cent water)⁴ gave results about equal to the Evanoff-Sweany medium, the latter, however, at times giving slightly heavier and more elevated growth, though more easily contaminated and of more complicated preparation. The potato cylinder medium⁵ without glycerol proved adequate as a nutrient medium in

TABLE 3.—*Growth of a Recently Isolated Nonglycerophilic Strain of Bovine Tubercle Bacilli on Various Egg Mediums Containing Glycerol-Esters and Fats*

Medium	Amount of Bacilli in Milli-grams Planted on Medium		
	0.000,1	0.000,001	0.000,000,1
Milk-cream-egg medium of Evanoff and Sweany (Am. Rev. Tuberc. 20:227, 1929)* (modification of Feldman [J. Am. Vet. A. 78:527, 1931])	4†	3	5
Yolk and water (inspissated)	3	3	4
Glycerol-yolk and water (inspissated)	0	0	0
Cream-milk and egg yolk	3	4	4
Butter and yolk	3	4	5
Olive oil and yolk	3	4	6
Tributyrin and yolk	0	0	0
Tricaproin and yolk	3	4	0‡
Tallow fat and yolk	5	5	8

* The fats added to the yolk were added so that their glycerol content was equivalent to the amount of combined glycerol in the Evanoff-Sweany medium.

† The results are recorded as a positive culture by giving the numeral indicating the number of weeks when it first became positive macroscopically.

‡ Tricaproin in slightly higher concentration was found to be decidedly toxic.

most cases for purposes of isolation. None of these mediums, however, gave a profuse growth, and even in transplants the cultures were sparse. Passage of the nonglycerophilic strains through guinea-pigs did not alter the tendency of these micro-organisms to sparse growth and early retardation of proliferation on the mediums. Such improvement in growth as did occur after passage through guinea-pigs was to be attributed entirely to the rapid increase in the number of the bacilli in the lesions of this animal, highly susceptible to this strain. There was noted also no tendency to a change from nonglycerophilic to glycerophilic properties in passage through guinea-pigs. Whether this change can be brought about remains for further controlled tests to disclose. An attempt to prepare a single medium suited to growing both glycerophilic and nonglycerophilic bovine bacilli by utilizing for this purpose various glycerol esters and fats did not prove successful. An attempt to enhance the growth of nonglycerophilic bovine tubercle bacilli by the addition of amounts of fats and esters found in the milk-cream egg medium of the Feldman modification of the Evanoff-Sweany medium only proved that the inspissated egg yolk itself was as adequate without these as with them.

These experiments, recorded in table 3, also reveal the static effect of free pure glycerol in the medium toward the nonglycerophilic bovine bacillus.

The difference in the nature of the colonies of the average culture of bovine tubercle bacilli from the avian or human bacilli is also expressed in the difficulty

encountered in preparing entirely satisfactory suspensions of these bacilli with 0.9 per cent sodium chloride solution. The usual dilution point at which consistent cultures can still be obtained in all tubes of medium planted is at about 0.000,001 mg. This is due to the difficulty encountered in grinding the masses of bacilli as satisfactorily as one can grind either human or avian bacilli.

As was pointed out last year, in recommending the tissue substrate microculture for disclosing tubercle bacilli in practice,⁶ there are several important requirements that must be fulfilled for obtaining growth from small numbers of tubercle bacilli: a sterile medium, a good nutrient, an appropriate incubator temperature (about 37 C.) and isotonic and neutral conditions of the nutrient medium. To the uninitiate, it may appear too meticulous to stress repeatedly means of maintaining the original conditions of the medium, but when one realizes that a cellophane cap placed over a tube of medium to be incubated for several months possesses no value in preventing evaporation and that covering a



Fig. 5.—The dissimilarity of growth of human tubercle bacilli (H. 39, a recently isolated virulent strain) on different good nutrient mediums. Tube 1 contains an inspissated egg yolk medium, showing the characteristic spreading low type of growth on egg mediums. Tube 2 contains an inspissated potato egg medium showing the elevated heavy growth characterizing potato mediums, a result which predominates in the mixtures. Tube 3 contains an inspissated whole blood medium showing the veil-like thin growth characteristic for this medium.

cotton plug with paraffin does not prevent the ready access of air into the culture tube, one feels justified in again reviewing the results of a few of these experiences during the course of years in culturing slow-growing micro-organisms.

Surprising as it may seem, a paraffin-dipped cloth placed over the mouth of the tube and held in position with a rubber band after the cotton plug had been dipped in paraffin proved more adequate than a tin foil cap in preventing drying of the medium during incubation, without interfering with the access of air, and a cork stopper inserted into the tube proved equally valuable and more easily used. A cork dipped in paraffin and tightly inserted may, however, interfere with the ready access of air into the tube. A plug of paraffin poured over the cotton stopper and perforated with a

4. Corper, H. J., and Cohn, M. L.: The Nutrient Quality of Eggs for Growing Tubercle Bacilli, Am. J. Hyg. 18:1, 1933.

5. Corper, H. J., and Uyei, Nao: The Cultivation of Tubercle Bacilli, J. Lab. & Clin. Med. 13:469, 1928; A Simple Glycerol Water Crystal Violet Potato Cylinder Medium for Diagnostic Cultures of Tubercle Bacilli, Arch. Path. 7:835 (May) 1929.

6. Corper, H. J.: A Tissue Substrate Microculture for Tubercle Bacilli, J. A. M. A. 99:1315 (Oct. 15) 1932.

pin-hole, as done at Saranac Lake, is adequate, but possesses disadvantages when one is making transfers.

With certain fundamental information evolved regarding the growth of tubercle bacilli, it has been possible to suggest three simple mediums as nutrients adequate for growing small numbers of human, bovine and avian tubercle bacilli: the potato cylinder medium, the inspissated egg yolk medium and the tissue substrate of blood or egg yolk. These mediums appear to possess all the nutrient advantages for pathogenic tubercle

destroying the usual undesirable contaminator found in tuberculous material. This information makes available methods for isolating tubercle bacilli from tuberculous materials for diagnostic purposes equivalent in efficiency to the guinea-pig test⁸ and economically amplifies the certified diagnosis of tuberculosis for practice.⁹

The fundamental information obtained regarding growing tubercle bacilli has made possible the preparation of a simple synthetic nonprotein medium (Long's asparagine medium) suitable for efficient and maximum growth from heavy plantings, which has led to the preparation of a pure crystalline tuberculin (Long and Seibert¹⁰) and to extensive investigations under the auspices of the National Tuberculosis Association on the chemistry of tubercle bacilli and allied acid-fast bacilli (Johnson, Anderson¹¹). It has also led to the discovery of new chemical compounds distinctive for these bacilli (an active hexacosanic acid called phthioic acid, a previously described tuberculinic acid, and biologically active polysaccharides) and the biologic reaction of these various chemical fractions (Sabin¹²).

The preparation of a pure tuberculin on a large scale and of maximum large amounts of bacilli free from extraneous materials offers possible refinement and more extensive use of pure specific products for diagnostic and therapeutic purposes.

An extension of the knowledge regarding the growth and perpetuation of tubercle bacilli, appropriately planted, makes possible a study of various strains and their progeny so that the relation of the laboratory strain and the recently isolated pathogenic strain can be compared and means devised to elucidate changes produced by various reagents and physical conditions exerted over long intervals of time.

The lack of knowledge regarding the factors involved in causing loss of virulence of virulent bacilli or restoration of virulence to avirulent tubercle bacilli is attested by recent literature and controversies on BCG. However, in a study¹³ of twelve year old broth cultures of human and bovine tubercle bacilli, it was found that these bacilli, once well grown, would remain alive for over twelve years at incubator temperature within a range of pH 6.24 to 7.6. During the twelve years' residence at 37 C. the virulence of the bacilli had not appreciably changed. Thus this offers a method for preserving original newly isolated strains of tubercle bacilli while studying their progeny. It also offers a means of preserving strains found specially suited to preparing satisfactory biologic products and obtaining from them original subcultures at any time.

Although extensive investigations have been pursued in studying the biologic reactions of tubercle bacilli and the pathogenesis of tuberculosis, knowledge is still inadequate regarding the propagation and multiplication of the bacilli in the animal economy, as is attested to by the lack of knowledge to explain the susceptibility of different animal species to the various strains of

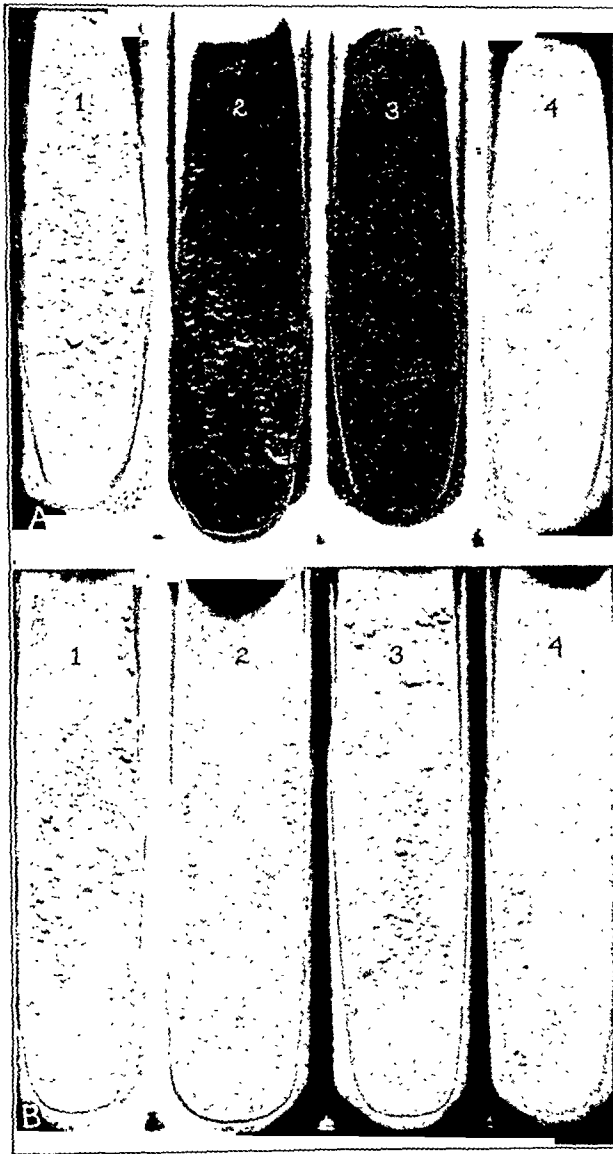


Fig. 6.—The growth of virulent avian tubercle bacilli (strain 7) in small numbers on (A) an inspissated glycerol egg yolk medium and on (B) a 0.01 per cent gentian violet egg medium (Petroff). Note the successful growth of the bacilli after six weeks at 37 C. planted with suspensions containing 0.000,000,001 mg. of bacilli on both mediums. The gentian violet in the latter medium is not static to avian bacilli but in this concentration inhibits the growth of small numbers of human and bovine tubercle bacilli.

bacilli of the more complicated mediums prepared from a large number of unessential constituents. Two acids in appropriate concentrations (6 per cent sulphuric acid and 5 per cent oxalic acid)⁷ and exposure for from thirty minutes to one hour at 37 C. have been found innocuous to tubercle bacilli while satisfactory for

7. Corper, H. J., and Uyei, Nao: Oxalic Acid as a Reagent for Isolating Tubercle Bacilli, *J. Lab. & Clin. Med.* 15: 348, 1930.

8. Corper, H. J., and Uyei, Nao: Further Observations with a New Method for Cultivating Tubercle Bacilli: A Comparison with Guinea Pig Inoculation and Petroff's Method, *J. Lab. & Clin. Med.* 14: 393, 1929.

9. Corper, H. J.: The Certified Diagnosis of Tuberculosis, *J. A. M. A.* 91: 371 (Aug. 11) 1928.

10. Seibert, F. B.: The Isolation in Crystalline Form and Identification of the Active Principle of Tuberculin, *Am. Rev. Tuberc.* 17: 402, 1928; 25: 724, 1932.

11. Anderson, R. J.: The Chemistry of the Lipoids of Tubercle Bacilli, *Physiol. Rev.* 12: 166, 1932. Long, E. R.: Chemistry of the Tubercle Bacilli, *Ztschr. f. Tuberk.* 64: 78, 1932.

12. Sabin, F. R.: Cellular Reactions to Fractions Isolated from Tubercle Bacilli, *Physiol. Rev.* 12: 141, 1932.

13. Corper, H. J., and Cohn, M. L.: The Viability and Virulence of Twelve Year Old Broth Cultures of Tubercle Bacilli, *Am. Rev. Tuberc.*, to be published.

tubercle bacilli. A great deal has been learned practically regarding the growth of tubercle bacilli in the culture receptacle, but the problem of the nutrition of the tubercle bacillus and the allied problem of propagation in the body merit further serious consideration by those interested in solving the problem of tuberculosis.

CONCLUSIONS

The importance of growing tubercle bacilli lies in the knowledge obtained from observing these pathogens in culture.

Tuberculosis is a disease of protean manifestations, and one of the important factors in its pathogenesis is the tubercle bacillus (*Mycobacterium tuberculosis*) of which there are a number of distinct varieties, three being especially important to man—the human, the bovine and the avian species.

These three pathogenic varieties, besides displaying distinct variegated propensities in different animal species, show certain phenomena on culture mediums which are common to all, and other phenomena individual to the different strains. Many of these may eventually be translated into in vivo interpretations.

Exact knowledge in growing tubercle bacilli, some of the phases of which are considered in this report, assumes practical proportions in the certified diagnosis of tuberculosis and the preparation of better biologic products for diagnosis and treatment and, allied with this, for studies of the chemistry of the bacilli, and in the preservation of strains for biologic standardization, not to mention the many ramifications of practical investigation into the problems of virulence and pathogenesis. It is also pointed out that the fundamental knowledge regarding the growth of tubercle bacilli and especially of the bovine tubercle bacillus requires more extensive investigation before even the simple phenomena of the nutrition of this micro-organism are adequately understood.

The investigations recorded in this report also stress quantitative evaluation for the interpretation of phenomena concerned with the biology and nutrition of tubercle bacilli and, allied with this, the pathogenesis of tuberculosis.

ABSTRACT OF DISCUSSION

DR. HENRY C. SWEANY, Chicago: I wish to emphasize the variability of tubercle bacilli. Perhaps there are no two strains of tubercle bacilli that are exactly alike in their growth proclivities. One can recognize viable forms of the various types, the avian, bovine and the human, but with each strain there is a variability. Some strains will grow promptly from any septic material, while others will grow with great difficulty. For that reason a special type of medium on which to grow is required, particularly for the micro-organisms that are difficult to grow. That is why I have been so particular with the medium that Dr. Corper has tried out and which, perhaps unfortunately, bears my name. It is only a modification of some of the other mediums. All I have done to it is to add the cream; cream and milk seem to enhance the growth of the bacilli as nothing else will. I have simplified this medium and have modified it so that it is as easy to prepare as any other medium, with the exception of the potato medium. The work on this modification will appear in the *American Review of Tuberculosis*. I am partial to this medium because I have tried out many of the variations that Dr. Corper has mentioned and find that one may obtain a growth on simpler mixtures but will not be able to grow the bacilli that are difficult to grow. For the purpose of making a diagnosis, for example, or when one wishes to pick out the few remaining viable bacilli, one requires a special nutrient medium. Another point I wish

to emphasize is the effect of large masses of bacilli planted *en masse*. One observes that they grow better when there is a large mass. This fact has been known for many years, but I want to emphasize it with regard to infection, to human infection, for example. The larger the mass, the more readily the bacilli grow and the more vicious is the outcome of the disease. The converse of that is the smaller the dosage, the more favorable is the outcome. Did I understand the author to say that those bacilli lived for thirteen years in the tube and were alive?

DR. H. J. CORPER, Denver: Yes.

DR. SWEANY: I think that is a most remarkable and interesting experiment.

DR. CORPER: I might say it was over thirteen years.

DR. SWEANY: I had them live as long as four years, but the fact that they lived thirteen years will cast a great deal of light on the question of reinfection in the human body. There has been a great question in times past regarding the time the bacillus may survive within a human body and thus reinfect the individual. In the light of this observation I feel that it is possible for the tubercle bacillus to live in the human body for a decade and to cause a reinfection from within. Perhaps this is going to lead to some discoveries in the pathogenesis of tuberculosis.

DR. A. L. LEVIN, New Orleans: I should like to ask Dr. Corper whether pulmonary mucin or animal lung tissue has been tried as a culture medium for tubercle bacilli. The lungs are predominantly affected by the organism; the pulmonary tissue and its secretions should prove a most valuable and fertile soil, even under laboratory conditions, for the propagation and maintenance of the life of tubercle bacilli.

DR. H. J. CORPER, Denver: I have no doubt, but you are just a few years ahead of me. We are going to take that up.

DIAPHRAGMATIC HERNIA

SYMPTOMS AND SURGICAL TREATMENT IN SIXTY CASES

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The constant increase in the number of cases of diaphragmatic hernia that are being recognized is due chiefly to the marked advance that has been made in the methods of roentgenologic diagnosis. Moreover, the clinician is considering the possible presence of a hernia in the differential diagnosis of obscure and atypical complaints referable to the upper part of the abdomen and the lower part of the thorax, and he is having special roentgenologic studies made of these patients. The more frequent recognition of diaphragmatic hernias in recent years is exemplified by reviewing the cases seen at the Mayo Clinic between 1900 and 1933. From 1900 to 1925, 30 cases were recognized clinically and 19 patients were operated on; from 1925 to 1933, 147 cases were recognized and 60 patients were operated on. This shows that approximately five times as many cases were recognized in the last eight years as in the previous twenty-four years. Most of this increase in number of cases has been represented by the para-esophageal type of hernia. A large percentage of these hernias have affected elderly patients with mild symptoms or have been associated conditions in patients presenting other more serious disease in which operative treatment was contraindicated or deferred. This accounts for the relatively smaller percentage of cases in which operation has been performed in the

From the Division of Surgery, the Mayo Clinic.
Read before the Section on Surgery, General and Abdominal, at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

last eight years. I believe that the condition is more common than the present records indicate, for I have examined the diaphragm in the course of other abdominal operations and occasionally have found a small hernia that had not been recognized clinically or roentgenologically before operation. The diaphragm should always be examined in cases in which the conditions found at operation do not seem sufficient to account for the patients' symptoms, for it has been our experience at the clinic that some of the unsatisfactory results from operative procedures, particularly those on the gallbladder, stomach and appendix, are due to unrecognized diaphragmatic hernias, usually of the para-esophageal type. Recognition of a diaphragmatic hernia from the clinical symptoms alone is often very difficult because of the complex symptomatology, which often simulates that of other organic disease of the abdomen and thorax.

The symptoms are complex because of the various structures which are often involved in the hernia.

They depend on the amount of mechanical interference with the function of the herniated abdominal viscera, on the degree of interference with normal function of the diaphragm, and on the amount of increase in pressure which the herniated viscera produce within the thorax, causing impairment of respiration and circulation. The frequency with which the symptoms of diaphragmatic hernia may simulate those of other organic disease is shown by a study of the sixty cases in which I have operated since 1925. This series was studied to determine what the patient had been

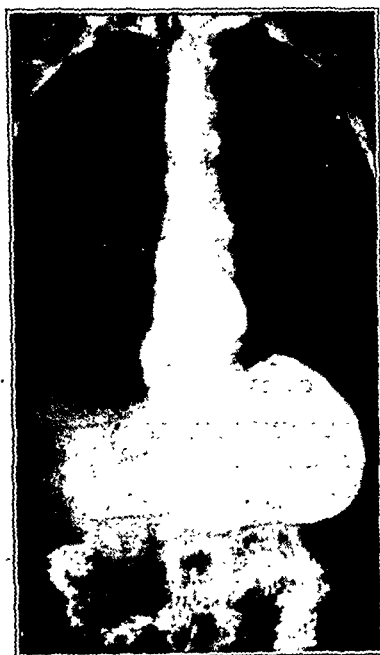


Fig. 1.—Para-esophageal, gastric, diaphragmatic hernia of moderate size, with herniation of about one fourth of the stomach through the esophageal hiatus, producing marked pressure and obscuring the lower third of the esophagus, as is shown by the barium in the esophagus. Previous diagnosis of disease of the gallbladder had been made.

treated for before the correct diagnosis was established. It was found that many patients had been treated for multiple conditions, which accounts for the increase in the number of diagnoses over the total number of cases.

In twenty-nine cases, diagnoses of cholecystitis were made; in nine of these cholecystectomy and in four cholecystostomy was performed. In twenty-three cases, diagnoses of stomach trouble were made; in eighteen of these the condition was considered to be ulcer and in five hyperacidity; one patient was subjected to gastro-enterostomy, two to pyloroplasty and the remaining twenty were given medical treatment. In seven cases diagnoses of secondary anemia were made, in all of which medical treatment was given, and in four of which multiple transfusions were administered. In seven cases the diagnosis was heart disease, in four of

which the disease was designated as angina pectoris and in all of which treatment was by medical measures. In four cases diagnoses of intestinal obstruction were made, and in one exploratory operation was carried out. In ten cases diagnoses of esophageal obstruction had been made, in five of which the condition was designated as cardiospasm, in two cancer of the esophagus, and in three stricture of the esophagus; all these patients were given medical care, and some were subjected to esophageal dilation. Esophageal stricture and cardiospasm in cases of diaphragmatic hernia are of interest from the standpoint of diagnosis, for these conditions may be associated with para-esophageal gastric hernia or they may be caused by a hernia through the esophageal opening. In one of the cases in which a diagnosis of carcinoma had been made there was a stricture at the lower end of the esophagus, and in one of the three cases in which a diagnosis of stricture had been made there was a definite stricture. In two of the cases in which diagnoses of cardiospasm were made the patients continued to have attacks of cardiospasm after operation. Lesions at the lower end of the esophagus may be difficult to visualize roentgenologically because the herniated portion of the stomach above the diaphragm will obscure the defect in the esophagus.

Stricture of the esophagus may be the result of a para-esophageal diaphragmatic hernia, for I have seen three cases, in two of which operation had been performed, which presented definite stricture. This may be the result of the erosion of the esophagus due to the trauma exerted by the herniated portion of the stomach. I believe that esophagoscopy is advisable in all cases of diaphragmatic hernia.

The conditions that influence the symptoms of diaphragmatic hernia depend to some extent on the type of hernia present, whether congenital or acquired, or whether or not trauma was an etiologic factor.

Data Concerning Situation, Etiology and Content of Hernia in Sixty Cases

Site of Opening	Cases	Etiology	Cases	Content of Hernia	Cases
Esophageal hiatus	43	Congenital (history of trauma 20) (short esophagus, 4)	43	Stomach only	28
				Stomach and colon	1
				Stomach only	2
				Stomach and colon	2
Hiatus pleuroperitonealis	1	Congenital	1	Colon and small bowel	1
Foramen of Morgagni	1	Congenital	1	Omentum (colon)	1
Posterior half and dome of diaphragm	15	Trauma (direct injury, 5) (indirect injury, 10)	15	Stomach only	3
				Stomach and colon	4
				Stomach, colon and small bowel	2
				Stomach, colon and spleen	2
				Stomach, colon, spleen and small bowel	4
Total	60		60		60

From a clinical standpoint, the history of preceding injury is helpful in establishing the diagnosis and in determining the type, urgency and prognosis of operative treatment. Because of the clinical and surgical significance of trauma as an etiologic factor, I have suggested that diaphragmatic hernia be classified in two main groups, nontraumatic and traumatic, and have subdivided these according to the various types.

A nontraumatic diaphragmatic hernia may be congenital or acquired:

1. If congenital, the hernia is due to embryologic deficiency, usually without an enclosing sac. The most common sites in the probable order of frequency of occurrence are (1) through the hiatus pleuroperitonealis



Fig. 2 (same case as figure 1).—Exposure of the esophageal hiatus by cutting the left suspensory ligament of the liver and retracting it to the right. The fusion of the sac of the hernia (a) with the gastric serosa: The two are separated from the stomach before the enlarged esophageal opening is closed. Closure of the opening (b and c) was accomplished with a double row of interrupted catgut and linen sutures, the innermost suture incorporating the lower end of the esophagus.

(foramen of Bochdalek), (2) through the dome of the diaphragm, (3) through the esophageal opening, (4) through the foramen Morgagni and (5) through the gap left by absence of the left half of the diaphragm.

2. If acquired after birth, the sites of occurrence are (1) through a point of embryologic fusion of the diaphragm, (2) at sites named under congenital types and (3) through the esophageal hiatus. The type last named has an enclosing sac.

Traumatic diaphragmatic hernia may be caused by one of two general types of injury:

1. In indirect injury to the diaphragm, the hernia may occur at any point, including points of embryologic fusion, but the most common region is the dome and posterior half of the left side of the diaphragm. It usually is the result of a severe, crushing injury and may or may not have a sac. When the hernia is through the esophageal opening there is a sac, and when through the leaf of the diaphragm there usually is no sac.

2. In direct injury to the diaphragm, the hernia may occur at any point and is usually the result of penetrating wounds, such as those from a gunshot or a

knife. Rupture of subdiaphragmatic abscess, or lacerations from fractured ribs, may be the cause. Usually there is no sac.

The accompanying table shows the site of the opening in the diaphragm, the probable etiology and the contents of the hernia in sixty cases in which I operated.

The presence or absence of an enclosing hernial sac is of some practical, clinical and surgical importance. A sac is usually not present in congenital hernia if there has been loss of structure of the diaphragm, or in traumatic hernias caused by direct or indirect injury. These may be said to be not true hernias but instances of evisceration of the abdominal organs. Usually several abdominal viscera, and a large portion of each involved organ, are concerned, and symptoms are very severe and urgent. In surgical repair of these hernias, preliminary phrenicotomy is often advisable and intratracheal anesthesia should be used during the repair. Hernias with a limiting sac are considered true hernias and the most common hernia of this type is the para-esophageal gastric hernia, which, in my experience, is the type of hernia most commonly found in adults. The stomach is usually the only abdominal organ involved, but the transverse colon may be drawn into the sac secondarily. I have seen three cases in which the colon had been drawn into an esophageal hiatus, causing intermittent attacks of partial obstruction: In all of these cases the entire stomach had herniated into the posterior mediastinum, the colon being drawn in secondarily because of its attachment to the greater curvature of the stomach. These hernias do not enter the true pleural

cavity but are in the posterior mediastinum and are essentially sliding types of hernias, for the sac, which consists of the diaphragmatic peritoneum, is fused with the serosa of the gastric wall. The sac gradually enlarges as more of the stomach becomes drawn or forced into the posterior mediastinum and pushes out into both pleural cavities but behind the mediastinal pleura, being limited above by the pericardium and heart, on which the herniated, distended stomach often exerts marked pressure and is the cause of disturbed function, which is not uncommonly diagnosed as angina pectoris.

The clinical syndrome of diaphragmatic hernia can be divided into two main groups: those in which the stomach only is incorporated in the hernia, which is usually of the para-esophageal gastric type, and those



Fig. 3 (same case as figures 1 and 2).—Appearance one month after operation for replacement of herniated portion of the stomach below the diaphragm and repair of the enlarged esophageal hiatus.

in which the stomach, large bowel and small bowel are included in the hernia, which is usually of the traumatic type.

The symptoms of para-esophageal gastric hernia are usually more uniform, extend over a longer period of time and are more frequently diagnosed as other organic disease than any other type of diaphragmatic hernia.

Para-esophageal diaphragmatic hernia may be considered to be congenital, acquired or traumatic, but it is essentially congenital. The symptoms may begin at birth or at any time during life. There may be a congenital weakness in the esophageal ring, and a definite hernia may later be produced by some type of injury or by increased intra-abdominal pressure. I have recently reviewed the results



Fig. 4.—Left traumatic diaphragmatic hernia showing practically the entire stomach herniated through a large rent in the dome of the left leaf of the diaphragm.

of examination in 500 cases in which I have examined the esophageal hiatus in the course of other abdominal operations and have found that in 65 per cent of cases the diaphragm was closed snugly around the esophagus and that there was no appreciable space between the two structures. In 35 per cent of cases at least one finger or more than one, could be placed between the esophagus and the margin of the diaphragmatic opening. In 55 per cent of the latter group, only one finger could be inserted between the esophagus and the diaphragm; in 40 per cent, two fingers could be inserted between the two structures, and in 5 per cent, three fingers could be inserted. In all cases in which three fingers could be inserted through the opening, I have had special roentgenograms made later and have occasionally found a small hernia to be present. I do not believe that in all these cases in which the esophageal hiatus is enlarged, hernias will ultimately develop, but hernias may develop later if the intra-abdominal pressure is sufficiently increased. Such increase in pressure may be caused by an injury of moderate severity or by any other condition which increases intra-abdominal pressure, such as obesity, pregnancy, severe strain or exertion such as is produced during vomiting or by violent physical exercise. Hernias following such causes may be considered of traumatic origin but are essentially congenital, in the same manner that hernias in the inguinal region are congenital.

The para-esophageal type of hernia (figs. 1, 2 and 3) produces more uniform symptoms than hernias elsewhere in the diaphragm, as has been said, because the stomach is usually the only abdominal organ involved. The symptoms are those of intermittent and usually progressive incarceration and obstruction of the stomach. At the onset, the attacks are usually mild; they consist of epigastric distress that is projected through

to the back and come on during, or shortly after a heavy meal but may be brought on by taking anything into an empty stomach, such as a cupful of coffee. These attacks are usually similar in character but vary a great deal in intensity, depending on the amount of incarceration and fixation of the stomach in the hernial opening. They are usually relieved by belching of gas and vomiting and are commonly considered to be due to cholecystitis for which the patient is treated. As more of the stomach becomes incorporated in the hernia, the attacks become more severe; the pain is projected straight through to the back and to the lower left side of the thorax, is more marked to the left of the spinal column, and often appears between the shoulder blades. This pain may be agonizing, and there is difficulty in belching of gas and vomiting because of spasm of the diaphragm and reflex cardiospasm. The spasm of the diaphragm produces an hour-glass deformity of the stomach, which interferes with the emptying of the upper loculus and causes increased intragastric pressure. The pressure of the herniated portion of the stomach on the lower part of the esophagus interferes with belching of gas or vomiting.

Spasm of the diaphragm is commonly associated with phrenic pain that is referred to the left shoulder and which at times may radiate down the arm. The increased pressure within the thorax causes cardiac embarrassment, with palpitation and tachycardia. Pressure on the lung and interference with the motion of the diaphragm cause dyspnea. These symptoms are augmented when the patient lies down, and in the more severe cases it is necessary for patients to sit up to breathe. The attacks may last for from a few minutes to several hours and not uncommonly are considered to be caused by myocardial disease, of which the most frequent diagnosis is that of angina pectoris. The attacks often recur immediately after food is taken. There is often an interval of weeks or months between attacks. It is probable that during the interval between attacks the stomach is not incorporated in the hernial ring and is in its normal position below the diaphragm. When the attacks become more or less constant, the stomach usually has become fixed in the thorax by adhesions. All the early symptoms of pressure are augmented during attacks. There is loss of weight from

an inability to retain food and from marked restriction in diet due to fear of bringing on an acute attack of gastric obstruction. This may be termed "food-fear." The vomiting is more severe during attacks and often is of the retention type. During the severe vomiting the vomitus may contain blood. If the



Fig. 5 (same case as figure 4).—Appearance of the colon immediately after the gastric roentgenogram, showing a large portion of the colon herniated with the stomach through the left leaf of the diaphragm.

attacks are of long standing, the patient not uncommonly has a burning sensation in the epigastrium after meals, which is relieved by taking small quantities of food. If large amounts of food are taken it may bring on one of the attacks that is associated with incarceration of the stomach. Many of these patients present a

of stomach in the thorax, and on the amount of disturbed function of thoracic organs.

The symptoms in traumatic cases in which the stomach only is involved in the hernia are essentially the same as those described but are usually more severe and acute and do not extend over as long a period. Traumatic cases of this type are not common. When hernia follows trauma, abdominal viscera besides the stomach are usually involved in the hernia, usually the colon, small bowel and spleen. In these cases, additional symptoms are caused by interference with function of the structures involved. This may be indicated by obstinate constipation, with accumulation of large quantities of gas in the colon or by periodic attacks of partial or complete obstruction. The sudden onset of symptoms in traumatic cases is usually directly related to the injury; the progress of symptoms is much more rapid than in cases of para-oesophageal hernia, and the first symptoms may be those of severe gastric hemorrhage or of intestinal obstruction. The respiratory symptoms are usually more marked in traumatic cases than in cases of para-esophageal hernia, because of the greater amount of viscera contained in the thorax. These viscera are in direct contact with the visceral and parietal pleura and pericardium, for there is no hernial sac.

TREATMENT

In cases of para-esophageal diaphragmatic hernia, in which the stomach only is involved and in which the symptoms are mild, treatment may be conservative (figs. 4, 5, 6 and 7). If symptoms become progressively more severe, the possibility of serious complications is great, and I believe that treatment in all such cases should be surgical, unless radical operation is contraindicated because of the patient's general condition. Operation should be performed before severe incarceration with obstruction and traumatic lesions of the stomach have occurred. The operative risk is increased by gastric retention, and the technical difficulties are enhanced by fixation of the stomach to the diaphragm and to structures within the thorax.

All cases in which the colon or small bowel are involved in the hernia demand early operation because of the danger of intestinal obstruction. However, these cases are usually traumatic in origin and it is best not to operate until the acute symptoms caused by the injury have subsided, if the patient's condition will permit.

Preliminary paralysis of the diaphragm, either temporary or permanent, is often of value in surgical treatment of incarcerated and strangulated hernias, because

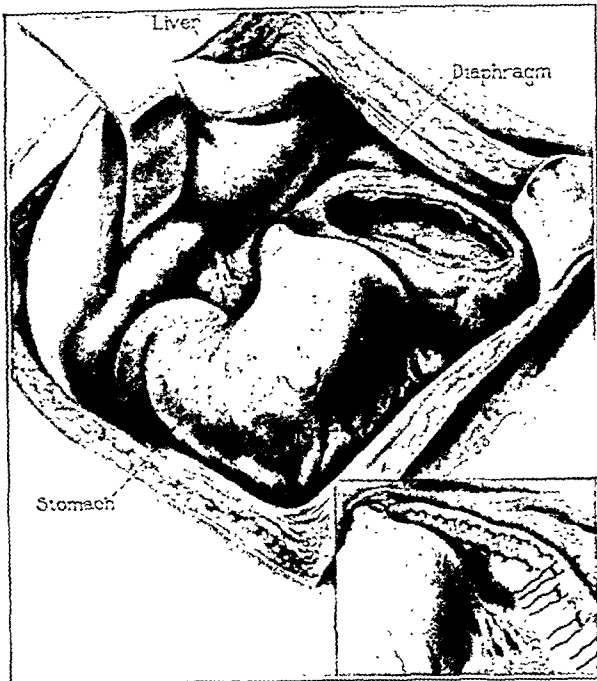


Fig 6 (same case as figures 4 and 5).—Large rent in the left dome of the diaphragm at approximately the juncture of the tendinous portion of the muscle after replacement of the herniated stomach, colon and small bowel in the abdomen as it appeared at the time of operation. Inset shows the closure of the rent in the diaphragm after preliminary interruption of the phrenic nerve overlapping the closure approximately one inch.

fairly good syndrome of ulcer, are given medical care, and obtain partial relief because they have taken a restricted amount of food at frequent intervals. Hemorrhage is not a common symptom; it usually is indicative of severe incarceration, with fixation of the stomach in the thorax. The bleeding is caused by erosion of the mucous membrane, resulting from the forceful pressure exerted during the attacks of vomiting on the large, distorted and congested stomach and to the trauma caused by the hernial ring as the stomach is forced in and out of this opening. This erosion may be superficial or, in cases of long standing, may form definite ulceration from repeated trauma. This is usually the final stage of incarceration. I have never seen a stomach that was strangulated as a result of hernia nor do I believe that it is possible because of the powerful musculature and rich blood supply of the gastric wall. Because of the fixation of the stomach in the thorax, the obstruction may be complete, and the vomiting may be so severe as to produce gastric tetany.

The foregoing is the clinical picture of a typical case of slowly progressive herniation of the stomach through the esophageal hiatus, but, of course, it cannot be expected that every case will present all the symptoms, any more than it can be expected that a typical history will be elicited in every case of any other organic condition. The chief symptoms depend, to some extent, on the time in the course of the disease at which the patient is examined, on the rapidity with which the hernia has been produced, on the amount of fixation

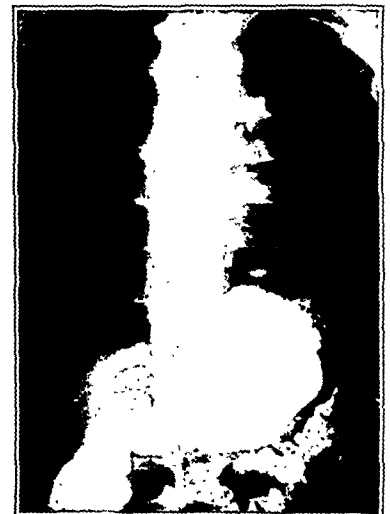


Fig. 7 (same case as figures 4, 5 and 6).—Appearance one month after operation, showing the stomach in its normal position below the diaphragm and the thorax normal.

it prevents spasm of the muscle and relaxes the hernial ring. It is of great advantage in closing large hernial openings, when there is considerable loss of structure of the diaphragm, for relaxation of the muscle permits the defect to be closed without tension, and if the diaphragm has been torn from the wall of the thorax it can be sutured to the intercostal muscles. Phrenicotomy is also of value in cases in which there is moderate congenital shortening of the esophagus; the relaxation and elevation of the diaphragm following this procedure permit the hernial opening to be sutured around the lower part of the esophagus, entirely above the herniated portion of the stomach. Approximation of small hernial openings, usually the para-esophageal type, can be accomplished without undue tension, and phrenic interruption is not necessary. In some instances in which it seems advisable to reestablish the function of the diaphragm, the nerve may be crushed or cut and then sutured, and function will be reestablished within three to six months thereafter.

Phrenicotomy may be used as a palliative measure when the radical operative procedure of closure of the defect in the diaphragm is contraindicated because of the patient's condition. The purpose of this procedure is to prevent spasm of the diaphragm, which is the cause of the severe attacks of incarceration of the stomach. I have performed this procedure in four cases in which radical operation was contraindicated because of the general condition of the patient. Two patients with myocarditis and poor cardiac compensation were more than 70 years of age. One patient came to the clinic primarily for renal colic. It was necessary to remove one kidney, and the function of the remaining kidney was not good. The symptoms of one patient, an infant, were markedly relieved following phrenicotomy, and the parents did not wish the child to be submitted to radical operation. This procedure does not completely relieve the symptoms. There is always a moderate amount of gastric distress immediately after, or shortly after, heavy meals, but the patients get along fairly well if they are careful with their diet.

Phrenicotomy relieves the acute attacks of incarceration, if the stomach is not fixed in the thorax. It is not applicable to hernias in which a large portion of the stomach is in the thorax, causing marked pressure on the heart and lungs, nor is it applicable in any case in which the intestines are involved in the hernia. This procedure should not be employed when radical operative repair can be effected. The only operative procedure which will assure complete relief of symptoms is replacement of the herniated abdominal viscera and repair of the abnormal opening in the diaphragm.

I have used both the abdominal and the thoracic approach in reduction and repair of these hernias. In two cases in which the thoracic approach was used it was necessary to resort to a combined thoracic and abdominal procedure in order to free the adherent abdominal viscera from the abdominal side of the diaphragm, if repair was to be accomplished without injury to abdominal viscera. In one of these cases, postoperative empyema developed, necessitating drainage and resection of a rib before ultimate recovery. I prefer the abdominal approach because I believe there is less risk of thoracic complications. This approach is of particular advantage in cases of esophageal hernia, for the herniated stomach is usually confined in a sac in the posterior mediastinum and does not enter the true pleural cavity.

The technical difficulties of adequate exposure in these cases are often considerable because fixation of the left lobe of the liver to the diaphragm by the coronary ligament makes the esophageal opening inaccessible. Exposure of the upper margin of the opening is greatly facilitated by cutting this coronary ligament and retracting the left lobe of the liver to the right. The spleen is often very adherent to the lower margin of the opening and to the posterior part of the diaphragm and usually can be separated by blunt dissection and retracted posteriorly by a properly constructed retractor. The sac of the hernia in these cases must be either completely removed or cut from its attachment to the stomach and hernial opening before the enlarged esophageal hiatus is repaired. It is important to place a stomach tube through the esophagus into the stomach before closing the opening around the lower part of the esophagus; this prevents constriction due to tight closure. In traumatic cases of long standing, the abdominal viscera are usually adherent to the structures in the thorax, often as high as the apex of the lung. These adhesions can be separated by approaching them through the hernial ring, with less danger of injury to the abdominal or thoracic viscera than if another approach is used, for the definite relationship of the herniated structures can be established. In many instances it is necessary to ligate, or otherwise to prevent bleeding from, the bands of adhesions high in the pleural cavity, on either the visceral or the parietal surface. This is often satisfactorily accomplished with the high frequency coagulation cautery when it is difficult to tie a ligature. In cases in which there has been considerable loss of structure, the defect in the diaphragm is repaired with fascia lata. This is most commonly indicated in the para-esophageal type of hernia, in which type there is often considerable loss of structure posteriorly. In most cases the opening is repaired with a double row of chromic catgut and linen sutures, and in traumatic cases it is advisable to obtain overlapping of the closure for one-half inch, if possible.

The abdominal approach is of value in determining the presence of associated lesions in the herniated abdominal viscera as well as any other pathologic lesion within the abdomen which may require treatment at the time of operation or later.

The operative procedures in the sixty cases on which this paper is based were as follows: In seventeen cases the phrenic nerve was permanently interrupted and in eight cases temporarily interrupted as a preliminary measure to operative repair of the hernia. In four cases the left phrenic nerve was permanently interrupted as a palliative measure, and in fifty-six cases the herniated abdominal viscera were replaced in the abdomen, and the abnormal opening in the diaphragm was repaired. In two of these cases a combined thoracic and abdominal approach was made. In fifty-four cases, the abdominal approach was made. In one case, a Polya type of gastric resection was done for gastric ulcer high on the lesser curvature of the stomach at the time of operation. In one case, appendicostomy was performed at the time of operation, because of marked dilatation of the colon resulting from partial obstruction during its residence in the thoracic cavity. In four cases there was moderate congenital shortening of the esophagus, associated with the hernia; the diaphragm could be sutured entirely above the stomach after the diaphragmatic muscle had been paralyzed by phreni-

cotomy. In one case, extrapleural thoracoplasty was performed preliminary to repair of the hernia.

There were five deaths following operation. One patient, who had a congenital type of hernia through the hiatus pleuroperitonealis, died on the second day after operation, from shock or cerebral embolism, although a definite cause of death was not found. One patient with a traumatic type of hernia died on the seventh day, from pneumonia involving the right lung and with partial collapse of the left lung; he was moribund at the time of operation and had been unable to retain food or to lie down to sleep since the accident six weeks before. In three of the fatal cases the hernias were of the acquired esophageal type; one patient died on the twelfth day from pulmonary embolism; one on the second day, from respiratory and cardiac failure, and one, three hours after operation from respiratory and cardiac failure for which definite cause was not found. The latter two patients were very obese, and, although operation was delayed several weeks to give time for the patients to reduce in weight, they could not reduce without sacrificing strength. I believe reduction in weight is very important in these cases, particularly if a large portion of the abdominal viscera has been in the thorax for a long period. In these cases the herniated viscera have lost their right of residence in the abdomen, and reduction of weight is necessary before their replacement, because of the danger associated with the increased pressure when replacement has been effected.

I have recently reviewed replies to letters of inquiry that were sent to the fifty-five patients who recovered. Of the four patients who were subjected to palliative interruption of the phrenic nerve, one has since died of angina pectoris; another, 76 years of age, died of a cause not definitely ascertained but which apparently was a cardiac condition, for she had had myocardial degeneration at the time of her operation; the other two of the four patients have obtained partial relief of symptoms. Of the fifty-one patients who were subjected to radical operative procedures, all except one have obtained relief of symptoms. One patient had an influenzal type of pneumonia three months following the operation, and, because of the severe strain from coughing, the hernia recurred, with associated symptoms. All patients have been examined roentgenologically from six months to one year, or every year, after operation.

SUMMARY

The seeming increase in the incidence of diaphragmatic hernia is the result of more frequent clinical and roentgenologic diagnosis and not to any actual increase in the number of cases. It may be said that the incidence of the condition is in direct proportion to the frequency with which it is thought of in making differential diagnosis. The symptoms are and vary in type and intensity, depending on the amount and type of herniated abdominal viscera and on the stage of the incarceration at which the patient is seen. The symptoms often simulate those of other organic disease of the abdomen and thorax, of which the most common are cholecystitis, peptic ulcer, cardiac disease, secondary anemia, and esophageal obstruction. The symptoms of diaphragmatic hernia are definite, and diagnosis can be made on the symptoms alone but must be confirmed by roentgenologic examination. Operative replacement of the herniated viscera in the abdomen, with repair of the abnormal opening in the

diaphragm, is the only treatment that insures complete relief of symptoms, and operative treatment should be carried out as soon as a diagnosis is made in cases in which the colon is involved in the hernia, which is usually in the traumatic type. In cases in which the stomach is the only organ involved, and the symptoms are mild, the condition can be treated conservatively, but the patient must be kept under constant observation. If the symptoms become progressive, operative repair of the opening should be made before serious complications develop, increasing the operative risk. Palliative interruption of the phrenic nerve may be resorted to in selected cases in which reparative operation is contraindicated. Preliminary phrenicotomy is often of value in repair of enlarged hernial openings if there has been considerable loss of structure. Radical operation was performed in fifty-six of the sixty surgical cases that form the basis of this paper. There were five operative deaths and one recurrence.

ABSTRACT OF DISCUSSION

DR. C. A. HEDBLOM, Chicago: The symptoms of diaphragmatic hernia may simulate closely those of gallbladder disease, peptic ulcer, intestinal obstruction and a variety of other lesions. The diagnosis is confirmed roentgenologically by finding a portion of the stomach or bowel in the thoracic cavity. Occasionally an air-containing viscus will produce a roentgenologic picture sufficiently characteristic to be recognized as such, but usually a contrast medium is necessary for confirmation. However, the failure to demonstrate a viscus above the diaphragm does not necessarily exclude diaphragmatic hernia, for the reason that the hernia may be spontaneously reduced at the time of the examination. This is particularly true of a hernia at the esophageal hiatus when the roentgenogram is taken in the usual standing position. Roentgenograms should therefore be taken in such a position that the barium-containing viscus will gravitate into the thorax. One of the reasons for the apparently marked increase in incidence of esophageal hernia in recent years is doubtless the more widespread adoption of this technic in roentgenography. Automobile accidents are producing an increased incidence of traumatic hernia. Diaphragmatic hernia may produce a great variety of combinations of symptoms, and the diagnosis may be entirely missed if this condition is not kept in mind in differential diagnosis. A hernia through the esophageal hiatus practically always has a sac. Therefore, one can repair such a hernia through an abdominal approach without producing a pneumothorax. However, the exposure and repair of such a hernia may be very difficult technically. Inefficient repair will usually result in recurrence of the herniation. A hernia through the parasternal space of Morgagni is also best repaired through an abdominal approach. The exposure is not difficult and there is usually a sac preventing pneumothorax. Traumatic hernias and those of congenital type located laterally, in my opinion, can usually be dealt with most satisfactorily through a thoracic approach, particularly if chronic in type, in which case reduction from below may be impossible. The adoption of surgical repair of diaphragmatic hernia has been tardy because, first, of late diagnosis in a large proportion of them; secondly, of failure to recognize the different indications in the various anatomic types; thirdly, of the high mortality incident to operation in the presence of obstruction. In a series of 378 cases which I have studied, the mortality in the presence of obstruction was 60 per cent, but the mortality if operated before obstruction in recent years has not been higher than that of many other abdominal conditions for which surgical treatment has been generally accepted.

DR. LLOYD NOLAND, Birmingham, Ala.: Strictly speaking, acute cases of rupture of the diaphragm, often presenting a picture of terrific injury with severe shock and frequently showing on examination a large part of the upper abdominal viscera in the chest, should not be classed as hernia but as acute traumatic rupture, thus differentiating this class of case from the congenital or acquired type. Dr. Harrington has touched on the

question of preparation of these patients for operation. I believe that operation should be performed in these acute rupture cases as soon as the patient can be brought out of shock, whether it takes a few hours or even a day or two. I have seen one case in which almost complete gangrene of the stomach developed in the first twelve hours after injury, and two other cases in which intestinal obstruction was definitely present within forty-eight hours. For this reason I again stress the necessity of as early operation as possible.

DR. STUART W. HARRINGTON, Rochester, Minn.: Dr. Hedblom has pointed out that hernias through the foramen of Morgagni are rare. That has been my experience, as there was only one hernia of this type in the entire series of sixty cases. In this case the omentum had herniated into the right chest cavity and had been diagnosed as a chest tumor originally. These hernias not uncommonly have the colon incorporated in the hernia. Dr. Noland has brought out a very important point in regard to the traumatic hernias, which are really not true hernias but more in a sense the evisceration of the abdominal viscera into the thorax. I think that type demands very much more care in its surgical treatment, and I thoroughly agree with his suggestion to go in as soon as the patient's condition will permit.

ESOPHAGEAL DIVERTICULUM

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This paper deals with the experiences of my associates and myself with forty-five patients operated on for esophageal pulsion diverticulum. In it, I hope to present some of our mistakes and difficulties, together with the measures we have taken to overcome them.

Historical references are omitted in this discussion, since they may be found in previous articles I have written on the subject¹ and because all of the allotted time will be required to cover the subject from the standpoint of the proposal set forth in the previous paragraph.

Symptomatology needs little mention, since it consists only of varying difficulty in swallowing and the regurgitation of previously swallowed food. A discussion of the relation of symptoms to sacs of varying size will also be found in my previous articles on this subject.²

Esophageal pulsion diverticulum is such a typical and definite entity that it requires but little description. The diverticulum is constant in location, arising from the back wall of the esophagus at the pharyngo-esophageal junction. The sac bulges out posteriorly between the fibers of the cricopharyngeus muscle or from the lowest portion of the pharynx, through the low fibers of the inferior constrictor muscle.

The sacs vary in size. They arise between the prevertebral fascia in back and the pretracheal fascia in front, and all tend to descend and without exception point in a downward direction. This is important, as it has to do with a most essential principle, high fixation of the sac, in operative procedures in these cases.

The sacs of the diverticula in this series have either been located in the midline or, as has been the case in most of our patients, have tended to be located slightly

to the left of the midline, so that all, with one exception, have been removed by an incision on the left side of the neck. The single exception was in a patient who had had an intrathoracic goiter removed from the right side of her neck by Theodore Kocher fifteen years previously and who, when seen by us, had another large intrathoracic goiter on the left side, dislocating her trachea and the sac of her diverticulum to the right.

We have approached the diverticulum in all of our cases through a good sized left longitudinal incision. We have not employed low transverse incisions, as has been suggested by some, for the reason that we wish to have wide and adequate exposure of the sac, its neck, the lowest fibers of the constrictor muscle often found below the neck of the sac, and the surrounding anatomic structures, particularly the region of the recurrent laryngeal nerve. One hears little about the danger of injury to the recurrent laryngeal nerve in operations on esophageal diverticula, yet this danger is real. The sacs of pulsion diverticula descend beneath the inferior thyroid artery. Ligation and division of that vessel is necessary in patients with large sacs, and dissections of the neck of the sac must be made at the point at which the recurrent laryngeal nerve passes beneath the lowest fibers of the inferior constrictor muscle, where they are attached to the horn of the thyroid cartilage and the nerve becomes intralaryngeal.



Fig. 1.—Appearance between the first and second stages of a pulsion operation in which the sac has been properly h-filled neck of the sac points definitely upward and the diverticulum itself does not fill completely with bismuth.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 13, 1933.

1. Lahey, F. H.: Successful Operation in Eight Cases of Pulsion Diverticula of the Esophagus, *Boston M. & S. J.* 196: 341-350 (March 3) 1927.

2. Lahey, F. H.: The Surgical Management of Pharyngo-Esophageal Diverticulum Based upon an Operative Experience with Twenty-One Cases, *Surg. Gynec. & Obst.* 51: 227-236 (Aug.) 1930; Diverticula of the Esophagus, *New York State J. Med.* 31: 457 (April 15) 1931; The Surgical Management of Very Small and Early Pulsion Esophageal Diverticula, *Surg., Gynec. & Obst.* 56: 187-191 (Feb.) 1933.

We have suggested and demonstrated in previous papers on the two-stage operation for esophageal diverticulum that complete dissection of the neck of the sac and implantation of the dome of the sac at a level higher than its neck is a procedure of the greatest importance. Such a high implantation can be accomplished satisfactorily only through a long longitudinal incision giving good exposure and permitting implantation of the dome of the sac by suturing it to the edge of the sternohyoid muscle or implanting it in the wound at a level as high as the superior thyroid artery.

When a sac is so implanted, the patient can, during the interval between the first and the second operation, swallow without difficulty, since no food lodges in such a high implanted sac. This is demonstrated in figure 1, showing the patient's diverticulum with bismuth in the esophagus a few days after the first stage procedure, with high implantation of the dome of the sac. This



Fig. 2.—Appearance after swallowing bismuth between the first and second stages of a pulsion esophageal diverticulum operation in which the sac has not been properly planted high. The downward to horizontal direction of the neck of the sac is shown, with its tendency, because of the undissected V at x, to catch esophageal contents.

roentgenogram shows clearly that the diverticulum sac can be so implanted that its course is upward and that it does not fill between the first and second stages of the operation. Figure 2 shows a sac not completely dissected and implanted high. There is a tendency of the bismuth to enter into it so that it can distend the sac.

Patients with their diverticulum sacs implanted high are so free from symptoms that I have always felt it possible that they might well go on very satisfactorily with no further operation. Owing to our fear of a possible recurrence, however, we have completed the operation in all the cases by a second stage removal of the sac from ten to twelve days later.

When difficulty occurs with the implanted sac by becoming distended with food and air, as it has in our hands in early cases, it is due to low implantation of the sac and the leaving of an undissected spur at the neck of the sac, which guides food into the sac.

Probably the most common mistake that is made in dealing with diverticula of this type surgically is incomplete dissection of the muscle fibers of the inferior constrictor from beneath the neck of the sac. Failure to do this will leave conditions favorable to the recurrence of the diverticulum. Great care must be exercised in dissection of the necks of the diverticulum sacs. In one's enthusiasm to do complete dissections at this point, it is easy to bring about perforation, leakage and consequent mediastinitis.

Another common mistake which I have previously mentioned is too great enthusiasm to pull the sacs of large diverticula out into the wound into which they

are to be implanted. This results in angulation of the esophagus and has, in our hands, caused esophageal obstruction, which required reopening of the wound and reduction of the dislocated esophagus to its normal course. When large sacs are implanted in the wound, the course of the esophagus must be observed, to make certain that it is not distorted.

In early papers on this subject, I described our method of dealing with the diverticulum sac at the second stage operation by separating mucosa from submucosa and cutting the mucosal layer off close, but not too close, to the longitudinal esophagus. This left a non-mucous membrane lined canal of submucosa and smooth muscle fibers, which was packed with boric ointment gauze and allowed to granulate in.

Since the publication of these papers, we have changed the plan of the second stage operation. In four cases done lately, in the second stage of the operation we have separated mucosa from submucosa, as shown in figure 3, well down to the longitudinal esophagus, and have ligated the mucosal tube with plain catgut and cut away the diverticulum sac; the stump has been cauterized with phenol (carbolic acid) and alcohol and allowed to drop back to its normal position behind the esophagus, and a drain carried down to it. As the result of our experiences with these four cases, I am convinced that this is not a good plan.

We employed this procedure because there was little or no leakage of esophageal contents after the second stage, the wounds healed promptly, and the patients left the hospital in a very short time.

In all these cases, however, there have been late secondary deep abscesses, requiring drainage, causing considerable pain, and necessitating the return of the patients for an opening of these abscesses. This complication is possibly caused by the small segment of necrotic tissue within the tie left on the back wall of the esophagus. We have returned to our original plan

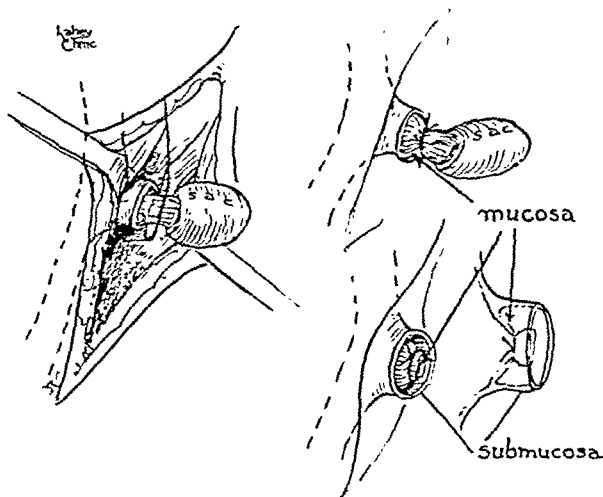


Fig. 3.—Separation of mucosa from submucosa and smooth muscle in the wall of the sac about the neck, ligation of the mucosal neck of the sac, and reduction of the ligated mucosa into the tube of submucosa and smooth muscle. This will now be given up for the procedure previously employed, because of the complications in this method.

of excising most of the mucosa of the neck of the sac and packing the remainder with boric ointment gauze to permit granulation and cicatrization of the wound.

We have twice done incomplete removals of the sac at the second stage of the operation, resulting in sinuses

developing in the wound through which esophageal leakage persisted and in which closure could not be accomplished. In both of these cases reoperation



Fig. 4.—Incomplete removal of the sac, resulting in persistent discharge of esophageal contents through the wound. Reoperation and removal of the remnant of the sac resulted in immediate closure of the wound and relief of symptoms. The arrow indicates the open and discharging end of the incompletely removed sac.

revealed good sized portions of the sac remaining (fig. 4), complete removal of which resulted in prompt healing of the fistula.

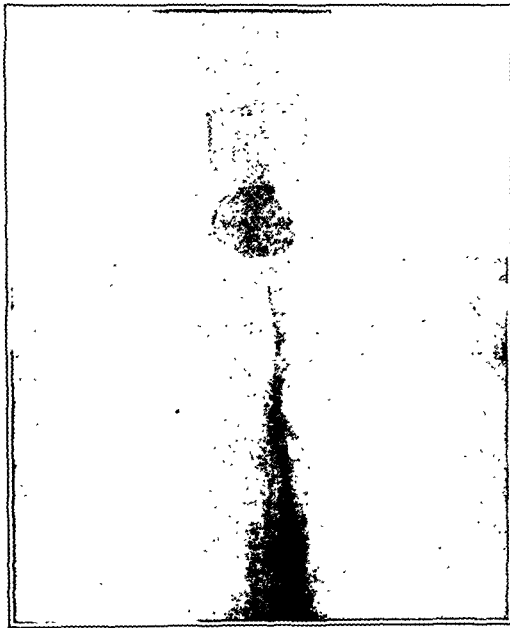


Fig. 5.—At first glance this appears to be a recurrence of the diverticulum. It is a ballooning due to fibrosis above the level at which the diverticulum was removed. Proof of this is given in figure 6.

Roentgenograms, after bismuth, of patients operated on for esophageal pulsion diverticulum show a tendency for dilatation of the esophagus to occur above the level of the point of removal of the sac (figs. 5 and 6). It

must be assumed, I believe, that whether these sacs are removed by a one-stage or a two-stage operative procedure, there will be considerable fibrosis and scarring about the esophagus at the level of the pharyngo-esophageal junction. Owing also to the fact that the original development of the condition indicates a weak point in the musculature at this part, which is not made especially stronger by the operative procedure, post-operative dilation is, in my opinion, very necessary whether the operation is done in one or in two stages.

We have dilated the esophagus in a number of these cases by passing good sized metal olive-tipped bougies without the use of a silk guide previously swallowed, but I do not believe that it is a safe practice. Not infrequently the bougie meets with obstruction in the distorted esophagus and can be gotten beyond this only by manipulation.

Whether one removes an esophageal diverticulum by a one-stage or a two-stage procedure, there will



Fig. 6.—Bismuth-filled esophagus of the same patient as is shown in figure 5, at a different time, when the small tentlike projection representing the remnant of the neck of the sac, previously excised, became visible. This indicates that the dilatation shown in figure 5, which looks like a recurrence, is a dilatation of the esophagus above the level of the point of removal of the sac. The only remnant of the previously existing diverticulum is shown in the little spur indicated by the arrow. These two films demonstrate how necessary it is to do postoperative dilation in these cases, whether the patients are operated on by a one-stage or a two-stage procedure.

always be the possibility of the distortion of the esophagus at the pharyngo-esophageal junction. This results in obstruction to the passage of the bougie, and the exertion of any pressure on the bougie could easily result in perforation and a fatality.

We have insisted now for some time on the passage of bougies on a guide as a much more satisfactory and safe plan. Patients are given a spool of silk and instructed to return the next day after having swallowed about 10 feet of it. This is a sufficient amount to act as a guide on which the dilator can be threaded, and when cut and swallowed after its use it causes no difficulty. Postoperative dilation should be continued, we believe, at decreasing intervals for at least a year, until all scarring and fibrosis about the pharyngo-

esophageal junction have softened and until there is local adjustment to the new conditions.

Since this is an effort to be helpful to others by presenting some of our difficulties in dealing with a good sized group of these cases, I have not entered into the relative merits of the one-stage or two-stage operation.

The youngest patient in the group was 34; the oldest, 80. With a few exceptions, all were operated on with procaine hydrochloride cervical block. There have been no deaths and the secondary wound has closed completely in all the cases. A few patients experience some difficulty in swallowing certain types of foods, but none have had any serious late postoperative difficulty, and most of them can swallow anything without discomfort.

CONCLUSIONS

I have tried to state all the difficulties that we have encountered in operating on forty-five patients for esophageal pulsion diverticulum and to describe the measures we have employed to overcome them.

Postoperative dilation in either one-stage or two-stage operations is necessary.

The safety of the two-stage operation is attested to in this series by the fact that forty-five patients have been operated on by this plan without a fatality.

605 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

DR. C. T. STURGEON, Los Angeles: Dr. Lahey mentioned that in his series of forty-five cases the sac was found in only one instance and that the operation was performed on the right side of the neck. In my series of twenty-one cases the sac was located on the right side in seven instances. The statement is frequently made that when one is in doubt as to the location of the sac, the operation can safely be performed on the left side. This is applicable only to the small sacs directly back of the esophagus. The large sacs are located definitely on either the right or the left side of the neck and this is easily determined before the operation by means of a roentgen examination. Another place where the recurrent laryngeal nerve can be injured is in cases in which it becomes necessary to ligate the inferior thyroid artery. This should be done some distance from the gland. I agree with Dr. Lahey's remarks regarding the two-stage operation. It is the operation of choice, as it affords the greatest safety to the patient. In cases in which the sac is large enough to protrude beyond the skin, I do not suture it to the sternocleidomastoid muscle. I introduce one or two sutures into the dome of the sac and anchor it to the skin so that, in the event of any leakage from the sutures, there will be no danger of infecting the tissues of the neck. The diagnosis of esophageal diverticulum is not difficult. A cough is many times the predominant symptom and is often the first one complained of. Frequently, at the onset, regurgitation of food is associated with coughing and the patient is often treated for some throat disturbance over a long period before the real condition is suspected. A roentgen examination is all that is necessary to make a diagnosis. The patient should be observed under the fluoroscope while drinking the barium mixture. In esophageal diverticulum the barium mixture can be seen entering the sac and during the act of deglutition part of the contents is seen to spill over from the sac into the esophagus. In dilatation of the esophagus due to stricture, this phenomenon is never observed, as the emptying always takes place from the bottom of the sac. In 1926, Dr. Lahey reported an instance in which the esophagus had been pulled out too much during the implantation of the sac and the patient had difficulty in swallowing. A catheter was passed through the sac into the esophagus and down into the stomach and the patient was fed in this way. I have not encountered this complication but I wish to thank Dr. Lahey for this suggestion as I was able to use this method of feeding in a patient with a large mediastinal sac. She was in a serious condition

and at first it was thought that it might be necessary to do a preliminary gastrostomy; but I decided to perform the first stage of the operation.

DR. ROY D. McCLURE, Detroit: Many different types of operation have been recommended for esophageal diverticulum. My excuse for having repeated to some extent the life history of this operation was that twenty-five years ago when I began to practice surgery the two-stage operation was not an established procedure. In the New York Hospital, in Johns Hopkins Hospital and in the Henry Ford Hospital, Detroit, I have seen the one-stage operation followed by serious complications, even death. One patient died three weeks after the operation as a result of a severe infection. I left yesterday a patient who had a perforation of the upper esophagus from a chicken bone. This patient is very ill with a mediastinitis. The case illustrates the rapidity with which infection in this region travels down into the chest. Dr. Lahey showed that in some cases the second stage of the operation may not be immediately necessary if the first stage is properly done. I have one patient in whom the first stage was done over two years ago. He had to leave the hospital after the first operation on some urgent business and he has never come back for the second operation, because he had no symptoms from the diverticulum. I sent for him last week and made a roentgenogram and esophagoscopy studies. There was a dribble of barium at the neck of the sac, but none entered the sac. The literature contains several cases reported in which only the first stage of the operation was done. It is possible that if the diverticulum is small a second operation may not be necessary. Some years ago Dr. Bevan recommended, as others have, the inversion of the sac only. The sac may regurgitate into the mouth and the patient may strangle. In one case I inverted the sac at the first stage, planning to snare off the sac from within the pharynx in three or four days. However, the next morning I was hurriedly called from the operating room because the patient was strangling, for the sac had become very edematous. Fortunately, Dr. W. T. Garretson of our staff had previously prepared a large snare, and we took off the sac without difficulty. The patient had no further trouble and the operation was a complete success. She lived eight years and had no trouble from the diverticulum. I am not recommending it even though it was successful in one case. We never had the courage to try it again.

DR. FRANK H. LAHEY, Boston: I have nothing further to say except to give a little comfort concerning what the roentgenologists will frequently say after an operation on patients for esophageal diverticulum. If a patient who has been operated on is sent to a roentgenologist who has had no experience with what happens after operation, he is very apt to send back a report that there is a recurrence. It usually is not a recurrence. It is the dilatation above the point at which the sac is cut off. This emphasizes how necessary it is to dilate the esophagus in these patients because of this fibrosis. If dilatation is done for a year, the fibrosis will soften and the esophagus will stay dilated.

Osteomalacia.—The condition with which Recklinghausen's disease has most often been confused is genuine osteomalacia. This perplexity was rife before 1891 and persisted for many years thereafter. Several enlightening considerations have contributed toward separating these diseases. The most important are: the proof that a deficiency of vitamin D is operative in the production of osteomalacia; the finding that Recklinghausen's disease is caused by hyperparathyroidism; the recognition that despite the apparent clinical similarity pathologic differences exist to differentiate these diseases. On microscopic grounds, the wide osteoid borders on the trabeculae, the absence of considerable fibrous tissue replacing the bone, the relatively infrequent presence of osteoclasts and the presence of a congested lymphoid marrow distinguish osteomalacia from Recklinghausen's disease. All these features have been discussed at length in the introductory and pathologic sections. It was pointed out that the cases described in the older literature as examples of osteomalacia with cysts and giant cell tumors are undoubtedly instances of Recklinghausen's disease.—Jaffe H. L.: Hyperparathyroidism (Recklinghausen's Disease of Bone), *Arch. Path.* 16:236 (Aug.) 1933.

Clinical Notes, Suggestions and New Instruments

PANCREATIC LITHIASIS

T. C. BOST, M.D., CHARLOTTE, N. C.

It is extremely rare for pancreatic stones to be diagnosed during life. A search of the literature brings to light only twenty-six cases which have come to operation and in which stones were removed. In the case here cited, stones were removed from the head of the pancreas at the first operation and ten years later stones were removed from the tail of this organ—thus making two additional operations, which brings the total to twenty-eight operations for the removal of pancreatic calculi.

It is probable that other patients have been operated on and the cases not reported. It is also very likely that other cases have been overlooked at operation. Pancreatic calculi have been reported in eighty autopsies.

REPORT OF CASE

History.—A man, aged 37, had had the usual childhood diseases; at the age of 12, he began to suffer with indigestion, gas on the stomach and attacks of colicky pains in the epigastrium, sometimes slight and at other times very severe, of two or three days' to two or three weeks' duration. There was



Catheters in ureters; shadows on both sides in region of the head and the tail of the pancreas.

little nausea, but the patient was able to eat very little during the attacks. The patient was in the army service in the World War, during which he had repeated attacks. Several gastrointestinal roentgen examinations were negative. Appendectomy was done in 1921 with no improvement in the condition. The attacks grew progressively worse; they were more frequent and of longer duration. Gastric analysis and another x-ray series were negative in 1921. In this year occurred his worst attack of sudden, acute epigastric pain, radiating to the back and left side along the costal margin. Morphine, three-eighths grain (0.024 Gm.) at a time, was required for relief. He was admitted to the Presbyterian Hospital in June, 1921, where I first saw him. He appeared to be very sick, suffering excruciating pain. There was marked tenderness and rigidity across the upper part of the abdomen; both rectus abdominis muscles stood out prominent and rigid; the lower part of the abdomen was slightly rigid. The chest was normal. The pulse was 130; the temperature, from 103 to 104, and the respiration rate, 30.

The white blood cells numbered 26,000; red blood cells, 4,500,000; hemoglobin, 90 per cent. The urine was normal and the Wassermann reaction negative.

First Operation.—Operation was done on the tenth day of acute illness. A right rectus incision was made and the gall-bladder, stomach and duodenum were found normal. The head of the pancreas was very large and indurated, and a grating sensation was made out when the head was palpated. A blunt opening was made in the head with a hemostat and several ounces of thick pus with the colon odor and a number of small stones were removed. A bit of tissue was also removed for section. A rubber tube and rubber-tissue drains were put in. There ensued a stormy postoperative reaction. Convalescence was slow, with a pancreatic fistula which drained for six weeks and was very irritating, but a thick coating of ointment of zinc oxide protected the skin well.

Second Operation.—The patient made a good recovery and remained well until May, 1930, when he had another attack of epigastric cramps with a drawing sensation and slight nausea but no vomiting. This attack lasted about a week and required several hypodermics of morphine. Roentgen examination showed a number of small shadows across the upper part of the abdomen in the region of the pancreas. He remained well, however, until Oct. 4, 1931, when an acute attack of cramplike pain developed along the left costal margin and over the left kidney and referred to the left shoulder, with nausea and some vomiting. This was the first attack of pain on the left side. The patient was again admitted to the Presbyterian Hospital on the fifth day of the attack. There was tenderness and rigidity over the upper part of the abdomen, most pronounced along the left costal margin and over the left kidney. The pulse was 120, the temperature 103, and the respiration rate 26; white cells numbered 24,000; red cells, 4,100,000, with hemoglobin, 85 per cent. Stools were negative for fat; the urine was normal other than for a few pus cells. Genito-urinary examination was negative for pus and the pyelogram revealed nothing significant. Roentgen examination showed a number of stones across the upper part of the abdomen at about the situation of the pancreas, from head to tail. The patient was kept under observation for ten days with no improvement, during which time he required sedatives, sodium amytal and morphine for the severe pain. Operation was performed on the fifteenth day, October 19. A left rectus incision was made. A large indurated mass was felt about the tail of the pancreas, attached to the spleen. There were old dense adhesions about the head of the pancreas, and stones could be felt in the head. The mass at the tail seemed to present best along the transverse mesocolon, and this was the route chosen. The upper part of the jejunum was attached to the mesocolon about the mass. In freeing the loop, a fistulous opening was produced, so dense and ulcerating was the attachment. The mass was opened by blunt dissection and several ounces of thick pus with the colon odor, much necrotic material, and a number of small stones were removed. Very little bleeding was encountered until the bridge under the back was lowered and the incision was about to be closed, when a severe hemorrhage occurred from the abscess cavity. No vessels could be seen. The cavity was packed with uterine packing and this was left in with a rubber tube and a cigaret drain. After encountering pus it was decided not to disturb the stones in the head of the organ. The patient reacted well and the gauze packing was removed piecemeal by the end of the first week. The patient was discharged from the hospital in two weeks. His convalescence was rapid and uneventful, and he has since been able to follow his occupation.

March 10, 1933, the patient appeared to be in good physical condition. He reported that he had had several slight attacks of epigastric pain for a few hours but had not required morphine or other anodyne since the operation in 1931. Examinations of the urine for sugar have been negative to date, notwithstanding probable injury to the islands of Langerhans resulting from the abscess of the tail of the pancreas.

COMMENT

In the case here reported, stones were removed from the head of the pancreas and ten years later stones were removed from the tail. Stones were palpated in the head at the time of

the second operation. These may have been overlooked at the first operation; otherwise there had been recurrence.

The roentgenogram is of the greatest diagnostic aid, as pancreatic stones contain a large amount of calcium carbonate. A flat plate should be made in indefinite abdominal conditions before bismuth subcarbonate is given in a gastro-intestinal series, and so-called calcified glands casting shadows in the region of the pancreas should be looked on as possible pancreatic calculi. Palpation of the pancreas should always be done in all abdominal explorations. A peculiar crepitus exists when there are multiple stones.

The operative results have been very gratifying. The mortality in the twenty-eight cases was about 7 per cent.

Professional Building.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
H. A. CARTER, Secretary.

AMERICAN COLLEGE OF PHYSICAL THERAPY

Recently physicians have been receiving announcements of an alleged special postgraduate course of lectures and clinics in physical therapy, offered by the American College of Physical Therapy at 5 North Wabash Avenue, Chicago. Many of these physicians have written to the Council on Physical Therapy, requesting information concerning the standing of the school. The announcement referred to states that the course of lectures and clinics is of two weeks' duration. Because of the similarity of the name, many physicians have assumed that this so-called college of physical therapy is affiliated with the American Congress of Physical Therapy. The congress informs the Council that there is no connection whatsoever.

The names on the "faculty" of this so-called college, according to the pamphlet, are George A. Remington, M.D.; Thomas G. Atkinson, M.D.; A. C. Held, M.D., and Charles E. L. Hanson, technician. E. D. Irvine is listed as the registrar. On the reverse side of the pamphlet there is printed a schedule of the lectures and also a detachable enrolment blank. Two courses of instruction are announced, one for physicians for which the fee is \$35, and the other for technicians, price \$20. On a business card referred to the Council by one of the inquirers, Thomas G. Atkinson, M.D., "Physical Therapist," is given the title of dean of the American College of Physical Therapy. According to material in the files of the Bureau of Investigation, Thomas G. Atkinson's professional antecedents are not what one would look for in the dean of a medical institution. He acted as a medicolegal expert for the "Wine of Cardui" quackery when that concern was suing the American Medical Association. When put on the stand and under oath, he falsified regarding his educational qualifications; he was for some time editor of the *Medical Brief*, an alleged medical journal that for years blackguarded scientific medicine; he operated the so-called Chicago School of Refraction, a spectacle-fitting affair purporting to give courses of instruction by mail, and he has been engaged in other dubious professional activities. At the present time, Dr. Atkinson appears to be the editor of the *Eye, Ear, Nose and Throat Monthly*, a publication that is not abstracted in THE JOURNAL.

Dr. George A. Remington, whose name appears first on the faculty lists, was graduated by the Chicago College of Medicine and Surgery in 1905 and licensed in Illinois the same year. He is listed as a member of the Chicago Medical Society and through that has qualified as a Fellow of the American Medical Association. He gives his specialty as proctology.

Dr. Adolph Carl Held was graduated by the Hering Medical College, Chicago, in 1913 and was licensed the same year. He, too, is a member of the Chicago Medical Society and a Fellow of the American Medical Association. His specialty is said to be gynecology.

The name of Mr. Charles E. L. Hanson appears on the "faculty" list as a technician. Mr. Hanson has been connected for some time with a commercial organization in the promotional sales of physical therapy apparatus.

A physician who called at the "college" for information reported that he was greeted by Mr. E. D. Irvine, registrar, who introduced himself as "Dr. Irvine" and informed the physician that the price of the course would be \$40, \$5 higher than recorded on the application blank.

The announcement referred to in the opening paragraph was attached to a piece of advertising matter of the McIntosh Electrical Corporation. One may be justified in assuming that the background of such an institution as the American College of Physical Therapy is more commercial than educational. Certainly one would hesitate to regard it as a reliable place in which to receive instruction in physical therapy. Of course, the "College" has not been approved by the Council on Medical Education and Hospitals of the American Medical Association.

The Council on Physical Therapy believes that short "courses" in physical therapy, that seem to be adjuncts to commercial concerns dealing in physical therapy apparatus, are to be uniformly condemned. Even short courses, sponsored by medical schools, are frankly makeshifts but do have at least a scientific background. A subject as intricate as physical therapy requires more study than the acceptance of a salesman's instruction of using physical therapy apparatus. It is to be hoped that institutions such as the American College of Physical Therapy are but a passing phase and that the time is not far distant when manufacturers of physical therapy apparatus will cease to support or promote them.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

EXTRALIN.—A liver-stomach concentrate resulting from the interaction of a mammalian liver extract containing the Cohn fraction D and stomach tissue material.

Action and Uses.—Extralin is proposed for use in the oral treatment of pernicious anemia.

Dosage.—For cases of pernicious anemia in relapse, an initial dosage of 2 Gm. (four pulvules) three times daily is suggested; 1.5 Gm. (three pulvules) three times daily constitutes an adequate maintenance dose for most cases. The amount necessary for maintenance varies with different individuals and can be determined only after repeated examinations.

Manufactured by Eli Lilly and Co., Indianapolis, Ind. U. S. patent 1,894,247 (Jan. 10, 1933; expires 1950). U. S. trademark 290,233.

Pulvules Extralin, 0.5 Gm.: The content of each pulvule is equivalent in antianemic potency to approximately 20 Gm. of fresh liver.

An extract containing the Cohn fraction D is prepared by grinding mammalian livers into water, adjusting the mixture to the iso-electric point (approximately pH 5 to pH 6), and heating to about 80 C. to coagulate protein; this is stirred for thirty minutes and filtered; the filtrate is reduced under vacuum to small volume. This extract is then admixed with finely minced fresh hog stomachs or fresh hog stomach linings. The hydrogen ion concentration is adjusted to approximately pH 5 and the mixture allowed to interact or digest for about two hours at 37.5 C. It is then spread out in a thin layer on pans and dried under vacuum. The dried product is removed from the drier and ground, then extracted with petroleum ether to remove fat. The defatted material is then extracted with water and filtered, and the filtrate concentrated under vacuum to a thick syrup. This is dried under vacuum and ground to the proper fineness. The proportions used are such that there is represented in the finished product one to two parts of original liver to one part of original stomach tissue material. The product is standardized clinically. Each gram is equivalent in antianemic potency to approximately 40 Gm. of fresh mammalian liver.

DIPHThERIA TOXIN-ANTITOXIN MIXTURE (See New and Nonofficial Remedies, 1933, p. 375).

United States Standard Products Company, Woodworth, Wis.
Diphtheria Toxin-Antitoxin Mixture, 0.1 L+.—(See New and Nonofficial Remedies, 1933, p. 376). Also marketed in packages of one vial containing 10 cc.

ANTIMENINGOCOCCUS SERUM (See New and Nonofficial Remedies, 1933, p. 367).

United States Standard Products Company, Woodworth, Wis.
Antimeningococcus Serum Polyvalent.—(See New and Nonofficial Remedies, 1933, p. 369). Also marketed in packages of one double-ended vial containing 30 cc.

Committee on Foods

GENERAL COMMITTEE DECISIONS

THE COMMITTEE ON FOODS AUTHORIZES THE PUBLICATION OF THE FOLLOWING GENERAL COMMITTEE DECISION ADOPTED FOR ITS OWN GUIDANCE AND FOR THAT OF FOOD MANUFACTURERS AND ADVERTISING AGENCIES ON FOOD COMPOSITION AND FOOD ADVERTISING.

RAYMOND HERTWIG, Secretary.

THE DESIGNATIONS "FOOD CONCENTRATE" AND "SCIENTIFIC FOOD CONCENTRATE" FOR FOODS

The terms "food concentrate" and "scientific food concentrate" are common designations in current advertising for food mixtures consisting mainly of sucrose, malt extract and cocoa, with a relatively small proportion of dried milk or skim milk and possibly a small quantity of dried egg. These mixtures are used chiefly for preparing chocolate and malt flavored, sweetened milk drinks.

The designations as used, implying a direct process of concentration in the manufacture of the foods concerned, are unnecessary for describing the products, are likely to be misunderstood by the public, are not informative, incorrectly convey the meaning of extraordinary food value, and are misleading by implication. The foods to which they are applied are no more "concentrates" or "scientific concentrates" than are sugar, dried milk, butter and other common foods.

Dried foods and partially evaporated foods are simply and clearly described as such. Little understood and vague terms should not be employed for describing foods to the public. Directly informative statements about foods protect the interests of the public and of manufacturers in food purchasing and selling. The term "concentrate" should be reserved for concentrated solutions of flavors or fruit juices which must be diluted for use, for highly potent vitamin preparations, or for concentrated extracts of foods which are recognized technically as concentrates and for which products the term "concentrate" is not misleading in fact or by connotation. It is appropriate to describe certain evaporation methods for preparing such foods as evaporated milk or malt extract syrup as concentration processes.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



RAYMOND HERTWIG, Secretary.

LEXINGTON CREAM SELF-RISING FLOUR (BLEACHED)

Manufacturer.—Lexington Roller Mills Company, Lexington, Ky.

Description.—Self-rising flour containing "short patent" soft red winter wheat flour (bleached), calcium acid phosphate, baking soda and salt.

Manufacture.—The ingredients are mixed in a batch mixer and automatically packed.

Claims of Manufacturer.—For the baking of cakes, biscuits and pastries in the home.

CLAPP'S ORIGINAL PUREE OF TOMATOES (ADDED SALT)

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Strained cooked tomatoes; a small amount of salt is added. The method of preparation is efficient for retention in high degree of the natural vitamins and minerals.

Manufacture.—Purchased canned tomatoes are strained in an atmosphere of steam and subsequently treated as described for

Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

The purchased canned tomatoes are prepared from washed tomatoes, which are scalded, hand peeled and trimmed, packed into cans, covered with a salt solution and passed through an exhaustor to remove absorbed air. The cans are sealed, processed under pressure and immediately cooled.

Analysis (submitted by manufacturer).—

	per cent
Moisture	93.6
Total solids	6.4
Ash	0.8
Salt (NaCl)	0.5
Fat (ether extract)	0.3
Protein (N X 6.25)	0.9
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)...	4.2

Calories.—0.2 per gram; 6 per ounce.

Vitamins and Claims of Manufacturer.—See Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

BABY RUTH DROPS—CHOCOLATE FLAVOR

Manufacturer.—Curtiss Candy Company, Chicago.

Description.—Confection containing sucrose, corn syrup, cocoa, chocolate liquor, caramelized sucrose and glycerol.

Manufacture.—Essentially the same as described for Baby Ruth Tablets (THE JOURNAL, Sept. 9, 1933, p. 855).

Analysis (submitted by manufacturer).—

	per cent
Moisture	2.0
Ash	1.2
Fat (ether extract)	4.3
Protein (N X 6.25)	3.1
Reducing sugars as dextrose	8.0
Sucrose (copper reduction method)	65.4
Crude fiber	0.0
Carbohydrates (by difference)	89.4

Calories.—4.1 per gram; 116 per ounce.

CLAPP'S ORIGINAL VEGETABLE SOUP (ADDED SALT)

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Comminuted cooked soup stock prepared from potatoes, tomatoes, carrots, wheat germ, unpolished rice, cabbage, celery, whole barley, salt, onions and water. The method of preparation is efficient for retention in high degree of the natural vitamins and minerals.

Manufacture.—The process of manufacture is essentially the same as for Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

Analysis (submitted by manufacturer).—

	per cent
Moisture	85.9
Total solids	14.1
Ash	1.7
Salt (NaCl)	0.5
Fat (ether extract)	0.2
Protein (N X 6.25)	2.0
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)...	9.9

Calories.—0.5 per gram; 14 per ounce.

Vitamins and Claims of Manufacturer.—See Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

VITAMIN D FORTIFIED PASTEURIZED MILK (150 STEENBOCK VITAMIN D UNITS PER QUART) ADVERTISING OF SPARKS DAIRY, INCORPORATED

Distributo.—Sparks Dairy, Inc., Buffalo.

Description.—Advertising for bottled pasteurized grade A cow's milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil); contains 150 vitamin D units (Steenbock, defined by the Council on Pharmacy and Chemistry of the American Medical Association, New and Nonofficial Remedies, 1933, p. 428) per quart.

Preparation.—The milk complies with the analytic and bacteriologic requirements specified by the laws of the state of New York and the city of Buffalo or other municipalities in which it is distributed.

See this section for Vitamin D Fortified Pasteurized Milk of W. J. Kennedy Dairy Company, Detroit, for description of fortification with vitamin D (THE JOURNAL, July 1, 1933, p. 34). The milk is pasteurized by the holding method (61 C. for not less than thirty minutes) and immediately cooled to 4 C. The bottles are cleaned with 4 per cent caustic alkali solution and are rinsed with chlorine water and cold tap water.

Analysis (submitted by manufacturer).—		per cent
Moisture	87.7	
Total solids	12.3	
Ash	0.7	
Fat	4.0	
Protein ($N \times 6.38$)	3.1	
Lactose (by difference)	4.5	

Calories.—0.7 per gram; 20 per ounce.

Vitamins.—The vitamin D concentrate used in the preparation of this vitamin D milk and the fortified milk are regularly tested biologically.

Clinical investigation shows this vitamin D fortified milk to be a reliable antirachitic agent.

Claims of Manufacturer.—A vitamin D fortified, antirachitic pasteurized milk having the natural flavor and food values of standard pasteurized milk. One quart is equivalent in vitamin D content to 2½ teaspoonfuls of good grade cod liver oil (60 Steenbock vitamin D units per teaspoonful).

(1) WHITE SWAN BRAND CRYSTAL TABLE SYRUP

(2) ANGEL FOOD BRAND WHITE SYRUP (CORN SYRUP FLAVORED WITH ROCK CANDY SYRUP)

Manufacturer.—Wheeler-Barnes Company, Minneapolis.

Distributors.—1. Paxton and Gallagher Company, Omaha.
2. Winston and Newell Company, Minneapolis.

Description.—Corn syrup flavored with rock candy syrup; the same as White Oak Brand Crystal White Syrup, 85 per cent corn syrup, 15 per cent rock candy syrup (THE JOURNAL, Oct. 15, 1932, p. 1353).

DIAMOND ALL-BUTTER BREAD (SLICED AND UNSLICED)

Manufacturer.—Mason City Baking Company, Mason City, Iowa.

Description.—This is the same as the accepted Diamond Bread (THE JOURNAL, Dec. 26, 1931, p. 1967) excepting that butter is the sole shortening ingredient.

GERBER'S STRAINED PRUNES (FLAVORED WITH LEMON JUICE)

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Strained cooked sun-dried medium size, pitted California prunes retaining in high degree the natural vitamin and mineral values; the coarser fibrous material is removed; flavored with added lemon juice. No added sugar or salt.

Manufacture.—The dried prunes are cooked under steam pressure in a glass lined pressure cooker until soft, are strained, admixed with lemon juice, canned and processed as described for Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

Analysis (submitted by manufacturer).—		per cent
Moisture	71.1	
Total solids	28.9	
Ash	0.9	
Fat (ether extract)	0.5	
Protein ($N \times 6.25$)	1.1	
Reducing sugars before inversion as invert	20.0	
Sucrose (copper reduction method)	0.4	
Starch (acid hydrolysis method)	0.6	
Crude fiber	0.5	
Carbohydrates other than crude fiber (by difference)	25.9	

Calories.—1.1 per gram; 31 per ounce.

Vitamins, Minerals and Claims of Manufacturer.—See Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

SPHINX BRAND FLOUR (BLEACHED) FOUR LEAF CLOVER BREAD FLOUR (BLEACHED)

Manufacturer.—Federal Mill, Inc., Lockport, N. Y.

Description.—A "short patent" Northwestern spring wheat and hard winter wheat flour; bleached.

Manufacture.—Selected wheats are cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen peroxide.

Claims of Manufacturer.—Intended for bread baking.

VITAMIN D FORTIFIED PASTEURIZED MILK (150 VITAMIN D UNITS PER QUART) ADVERTIZING OF ROCKFORD DAIRIES, INC.

Distributor.—Rockford Dairies, Inc., Rockford, Ill.

Description.—Advertising for bottled, pasteurized cow's milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil); contains 150 vitamin D units (Steenbock, defined by the Council on Pharmacy and Chemistry of the American Medical Association, New and Nonofficial Remedies, 1933, p. 428) per quart.

Preparation.—The milk complies with the analytic and bacteriologic requirements specified by the laws of the state of Illinois or other municipalities in which it is distributed.

See this section for Vitamin D Fortified Pasteurized Milk of W. J. Kennedy Dairy Company, Detroit, for description of fortification with vitamin D (THE JOURNAL, July 1, 1933, p. 34). The milk is pasteurized by the holding method (61 C. for thirty-two minutes) and immediately cooled to 4 C. The bottles are cleaned with 3 per cent caustic solution, and are rinsed with chlorine water and cold tap water.

Analysis (submitted by manufacturer).—		per cent
Moisture	86.9	
Total solids	13.1	
Ash	0.7	
Fat	4.1	
Protein ($N \times 6.38$)	3.5	
Lactose (by difference)	4.8	

Calories.—0.7 per gram; 20 per ounce.

Vitamins.—The vitamin D concentrate used in the preparation of this vitamin D milk and the fortified milk are regularly tested biologically. Clinical investigation shows this vitamin D fortified milk to be a reliable antirachitic agent.

Claims of Manufacturer.—A vitamin D fortified, antirachitic pasteurized milk having the natural flavor and food values of standard pasteurized milk. One quart is equivalent in vitamin D content to 2½ teaspoonfuls of good grade cod liver oil (60 Steenbock vitamin D units per teaspoonful).

(1) QUAKER BRAND MILK MACARONI (2) QUAKER QUICK MILK MACARONI (SHORT CUTS)

Manufacturer.—The Quaker Oats Company, Chicago.

Description.—(1) Semolina macaroni containing milk. (2) Thin walled short semolina macaroni containing milk.

Manufacture.—Durum semolina and definite proportions of powdered whole milk and water are thoroughly mixed in a dough mixer, kneaded in a kneading machine, transferred to pressure cylinders and forced through dies to produce the desired form or shape. The macaroni is strung on maple poles and dried.

Analysis (submitted by manufacturer).—		per cent
Moisture	10.8	
Ash	0.8	
Fat (acid hydrolysis method)	2.0	
Protein ($N \times 6.25$)	15.8	
Water-soluble protein precipitable by 40 per cent alcohol ($N \times 6.25$)	0.2	
Crude fiber	0.3	
Carbohydrates other than crude fiber (by difference)	70.3	

Calories.—3.6 per gram; 102 per ounce.

Claims of Manufacturer.—The milk solids content is equivalent to that of a macaroni prepared from semolina with fluid milk only as the liquid addition.

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SATURDAY, SEPTEMBER 23, 1933

ALCOHOL AND MUSCULAR EXERCISE

The problem of the real function of alcohol in the body seems to remain one of perennial scientific interest and sociological importance. During recent months the physiology of alcohol has again achieved a leading place in medical discussions because of the actions and activities initiated by the impending consideration of repeal of the Eighteenth Amendment. Every one realizes that ethyl alcohol may produce intoxication in man. The debates that have arisen and are still in progress on this theme deal primarily with the dosage and concentration: with the differences in the effects of 4 per cent as in beer, 8 per cent as in wine, 20 per cent as in fortified wines, or 50 per cent as in whisky and other distilled liquors. The crux of the discussion really centers in the concentration of alcohol that will be attained in the blood under different conditions of the ingestion of the beverage. The alcohol content of the blood determines whether the effects shall in any degree attain the possibilities of apparent inertness or the various stages of mild inebriation or severer intoxication.

It is generally admitted that alcohol is to some extent oxidized in the body. Only part of the ingested portion reappears in the excretions. As a consequence, alcohol has come into consideration whenever calories are under discussion. One of the most recent textbooks,¹ for example, states that ethyl alcohol, in various beverages possessing different degrees of potency and pleasantness, is consumed as a staple article of diet by a considerable portion of mankind. Since in small concentration it is almost completely oxidized in the body, with the production of heat, it may properly be regarded as food. If this commonly made deduction is fully tenable, a modicum of alcohol ought to act as the common foodstuffs do. As Carpenter,² an expert in this domain of investigation, has lately summarized the situation, whatever may be the material that is the immediate source of energy for muscle contraction,

all classes of nutrients, protein and fat, as well as carbohydrates, are ultimately drawn on to furnish directly or indirectly energy for muscular activity when there is an inadequate food supply. It is therefore of value both theoretically and practically to ascertain whether muscular activity accelerates the combustion and metabolism of alcohol.

The question is not merely one of academic interest. It may actually be of practical importance to know what relation alcohol can bear to the contractile processes in the body. Carpenter points out that, if more alcohol is burned during muscular exercise than during rest and there is no serious impairment of efficiency, alcohol is of value as a source of muscular energy, and it could no longer be contended that the energy for muscular activity was derived exclusively from any particular substance. If muscular exercise accelerates the combustion of alcohol, therapeutic use could be made of this fact when attempts are made to bring back an intoxicated individual to a normal condition or when one wishes to prevent the toxic and narcotic effects of large amounts of alcohol. If, on the other hand, there is no greater combustion of alcohol during muscular work than during the condition of rest, he adds, alcohol would occupy a unique place among the substances that can furnish appreciable amounts of energy in the animal body.

There is something timely, therefore, about the recent researches of Carpenter and his co-workers³ in the Boston Nutrition Laboratory of the Carnegie Institution of Washington on the effect of muscular exercise on the disappearance of ethyl alcohol in man. The procedure had been to study the respiratory exchanges as well as to measure the alcohol in the expired air, urine and blood. The dosage consisted of 30 cc. and 50 cc., respectively, of absolute alcohol in water equaling a volume of 250 cc. This is equivalent at most to a half pint of a fluid of 20 per cent alcohol content. According to the Boston physiologists, muscular exercise had no significant effect on the disappearance of ethyl alcohol from the body. The amount of alcohol eliminated in the expired air during muscular work and in the urine during rest or during muscular work was a relatively small factor in the disappearance of the alcohol. The metabolism of alcohol in the human body is independent of activity and proceeds at a uniform rate, whether the individual is at rest or is performing muscular exercise. Evidently the performance of hard labor is not an excuse *per se* for the use of alcohol as a source of energy in the contraction of the muscles. There are other evidences² that at best the nutritive value of alcohol consists in conversion into heat only and that alcohol cannot be utilized in cellular transformations of energy or in the performance of muscular work.

1. Cameron, A. T., and Gilmour, C. R.: *The Biochemistry of Medicine*, Baltimore, William Wood & Co., 1933.

2. Carpenter, T. M.: *The Effect of Muscular Exercise on the Metabolism of Ethyl Alcohol*, *J. Nutrition* 6:205 (March) 1933.

3. Carpenter, T. M.; Lee, R. C., and Burdett, Marion: *The Effect of Muscular Exercise on the Disappearance of Ethyl Alcohol in Man*, *Am. J. Physiol.* 105:17 (July) 1933.

OBSERVATIONS ON THE SMALL
INTESTINE

Foods and fluids enter the alimentary tract at the beginning of a pathway the length of which, in the adult, is about thirty feet. Within this long stretch of specially organized tissues the intake is brought into contact with a number of unique secretions of differing reactions, each endowed with peculiar digestive enzymes. With the food, bacteria and other forms of microbotic life find their way into the gastro-intestinal canal, which loses its bacterial sterility within a few hours after birth. The picture of the conditions confronting the ingesta is not complete without reference to the absorptive power of most of the digestive tract and to the motility that mixes and propels its contents. The result of this mélange of substances and the functions that it undergoes is represented by the feces.

It is interesting to visualize the nature and progress of the alimentary processes at different points along the canal. Thus it may be possible to detect aberrations of function and to provide corresponding relief. Fecal examination at times gives an important clue, as every clinician is well aware. The use of the stomach tube has permitted chemical exploration of the beginnings of the digestive tract, and of late the duodenal sound has made even further ingress possible. These devices have proved to be helpful, particularly for diagnostic purposes. The actual performances of the lower reaches of the intestine remain more obscure, except for evidence furnished indirectly by the x-rays.

Now and then some accident or misfortune enables man to secure more direct information of the activities of his "insides." A gunshot wound provided the opportunity for William Beaumont, America's pioneer physiologist—the backwoods physiologist, as Sir William Osler designated him—to explore the stomach and study its performances. Occasional ileostomies in patients have supplied opportunities to examine the nature and time of appearance of the contents of the small intestine, through investigation of the discharges from ileocecal fistulas. Recent studies by Landt and Daum¹ at the State University of Iowa College of Medicine have supplemented this meager knowledge. The residues obtained from an ileac fistula varied in consistency and color with the type of food. Milk and milk products gave a curdled yellow mixture; bread and jelly, a dark brown, smooth thin gruel, and meat a dark green, smooth thin gruel. The water content was remarkably constant for all kinds of food (from 92 to 97 per cent), including a normal breakfast.

This can only mean, as has been repeatedly noted, that secretion must go on simultaneously with absorption in the small intestine; otherwise the contents would not remain so distinctly fluid. It implies, further, that absorption of water must be a dominant feature of the

large intestine; otherwise the feces would ordinarily be fluid in consistency. Some investigators have concluded that the normal stool should be dehydrated, presenting sequestered particles like the scybala of some of the domestic animals. Cowgill² and his associates at Yale University have criticized this point of view.

Another rediscovered feature of the contents of the small intestine is exemplified in the lack of a fecal odor. Putrefaction, therefore, is more conspicuously restricted to the lower bowel. As an indication of the duration of the transit of digesting food residues—a somewhat debated topic—Landt and Daum found that the residues appeared from ileac fistula from an hour and a quarter to four and a half hours after breakfast. Cream appeared from an hour to an hour and a half after the second feeding. When no second meal was fed, the last of the breakfast residue appeared between 4 and 5 p. m. Small frequent feedings, particularly of milk, changed the consistency of the residue and the dry and moist weights but did not affect either the water or the nitrogen content. Such observations on man, supplementing the many published studies on experimental animals, help to give greater confidence in present-day teaching regarding the alimentary fate of food.

HOW INDISPENSABLE ARE THE
PARATHYROIDS?

It is more than forty years since, thanks to the researches of Gley, Vassale and Generali, the distinction in function between the thyroid and the parathyroids was experimentally established. It is generally admitted that the parathyroids supply a hormone that acts to regulate the supply of calcium in the blood. Complete extirpation of the glands leads to tetany and death unless reparative therapy is promptly instituted. In the earlier period, fatal consequences could be averted by administration of calcium in one form or another. After Hansen and, independently, Collip had achieved the success of preparing potent extracts from the parathyroids, the possibilities of replacement therapy by means of the hormone-containing products became a reality.

The subject has acquired a somewhat different aspect since vitamin D has become a recognized therapeutic agent. On a ration deficient in this factor animals will develop rickets, and a normal serum calcium and phosphorus level cannot be maintained even though the parathyroid glands are present. Consequently, recent investigators¹ have contended that, if it is conceded that a diminution in the serum calcium salts is the primary cause of tetany and that vitamin D is essential for normal calcium metabolism, medication with vitamin D should be the important factor in the prevention and

2. Cowgill, G. R.; Anderson, W. E., and Sullivan, A. J.: The Form of the Stool as a Criterion of Laxation, *J. A. M. A.* 101: 373 (July 22) 1933.

1. Landt, Harry, and Daum, Kate: Physical Characteristics of Residues from the Small Intestine, *Arch. Int. Med.* 52: 96 (July) 1933.

1. Kozelka, F. L.; Hart, E. B., and Bohstedt, G.: Growth, Reproduction and Lactation in the Absence of the Parathyroid Glands, *J. Biol. Chem.* 100: 715 (May) 1933.

treatment of this nervous symptom complex. If the parathyroids do not have a separate and distinct function in the deposition and dissolution of the calcium salts independent of vitamin D, it should be possible to complete a life cycle without the parathyroids, provided vitamin D is administered in doses that will maintain a normal calcium concentration in the blood.

Vitamin D is readily available today in the form of viosterol. Consequently it has been possible to subject these contentions to experimental investigation, which has recently been attempted by Kozelka, Hart and Bohstedt¹ at the University of Wisconsin. The results of their experiments on parathyroprivia with growing puppies and pregnant dogs indicate that the parathyroid glands do not perform a specific function in metabolism necessary for life. The fact that parathyroidectomized dogs develop normally and can survive a complete reproductive cycle points to the fact that these glands perform a secondary rather than a primary function. The Madison investigators maintain that in normal animals the parathyroids perform the necessary function of maintaining a normal serum calcium and phosphorus level in the blood, especially toward the end of gestation and early lactation, when the demands for calcium and phosphorus are particularly large. This is done at the expense of the skeleton. Their unusual activity in late gestation and early lactation would account for the many negative calcium balances that have been observed in lactating animals, in spite of the ingestion of liberal amounts of vitamin D.

Current Comment

VALERIAN IN THERAPY

There was a time when valerian was frequently prescribed by physicians as a constituent of remedies used particularly for dysmenorrhea and various hysterical and nervous disorders. Valerian consists of the rhizome and root of *Valeriana officinalis*. At one time several widely used female tonics depended largely for their effects on their content of alcohol and the presence within them of this Valerian, associated with a useless drug, Blessed Thistle, known also as *Cardus Benedictus*. In the old days when public confidence in therapy depended primarily on a bad taste and a strong odor, valerian was an exceedingly popular preparation. Today it is recognized as having but little virtue, if any, in disease, such power as it has being largely psychic effects resulting from the impression created by its appeal to the sense of smell. The U. S. Pharmacopeia and the National Formulary list several pharmacopeial preparations of valerian, but the product is omitted entirely from the list of Useful Drugs published by the Council on Pharmacy and Chemistry of the American Medical Association. Now attention is again called to this preparation by the fact that the health commissioner of New York has placed the sale of valerian and all its derivatives under strict control, so that they may now be sold only on prescription

by licensed physicians and veterinarians. Furthermore, all manufacturers of the drug or of any proprietary medicine in which it is used must state the specific amount of the drug contained in each container or package of medicine. These manufacturers as well as dispensing pharmacists must keep complete records of all valerian or any of its derivatives passing through their hands. Indeed, the control of this drug is to be as rigid as that accorded to opium and its derivatives under the Harrison Narcotic Act. Strangely, however, this control is exercised not because of any remarkably potent value or any lack of virtue attaching to valerian in the field of medicine but simply because its odor is so all pervading, so penetrating and so obnoxious that it has come to be the chief constituent of what is commonly called a "stink bomb." In an interview, Health Commissioner Shirley W. Wynne said:

The characteristic, strong and obnoxious odor of valerian is such that when used in stench bombs it does irreparable harm. It is next to impossible to completely remove the odor from articles with which it comes in contact. If the fumes from valerian come in contact with foodstuffs they are rendered unfit for human consumption, while if clothing or other such materials are sprayed with it they are rendered unfit for sale, for the clinging powers of the odor of valerian endure long.

Thus the control of valerian is not induced by its medicinal uses but is instead to be a curb on racketeering, a system for making easy money, which may be said to be one of the prime developments of the last quarter century and in which "stink bombs" constitute a significant part of the materia racketeeria.

THE BONE MARROW

The important rôle of the bone marrow in connection with the blood functions has served to center interest on this rather diversely distributed tissue. Fairman and Whipple¹ have stated that it is difficult to visualize the red marrow in any mammal because of the fact that the marrow is widely scattered throughout the skeleton. When the average physiologist tries to think of the bone marrow as a unit mass of marrow and fat cells he is at a loss for some object of comparable size and as a rule thinks in terms of the spleen. It is pointed out that in the best studied species, the dog, as much as half the total marrow volume may be fat and much of the red marrow consists of capillaries, stroma, a variety of white cells and mature red cells. Therefore it is safe to say that the parent red cells in the marrow can produce many times their own volume of mature red cells in an optimum diet period of two weeks. This is truly a respectable degree of productive activity and removes these red cells from the category of "drones in the marrow hive." Fairly accurate information is now available, thanks to the investigations of Fairman and Whipple and others regarding the comparative mass of the body involved in what is the functional marrow. The ratio of red to fat marrow is constantly fluctuating, owing to age, anemia and other factors related to production, maintenance and conservation of hemoglobin. This ratio may vary from 100 per cent red marrow with fat excluded to 20 per cent red and 80 per

1. Fairman, Edna, and Whipple, G. H.: Bone Marrow Volume in Adult Dogs, *Am. J. Physiol.* 104: 352 (May) 1933.

cent fat marrow, both extremes observed in the anemic dog. In the adult man the proportion of marrow to body weight may be as high as 5 per cent.² According to Fairman and Whipple, in the experimental animals at least, the parent red cells in the red marrow under optimum conditions in a period of two weeks may produce many times their own volume of mature red cells. The red marrow, spleen and liver are intimately related in the production, maintenance and disposal of the red cells and hemoglobin. There is evidence that the liver is essential for the production of the parent substances that go to form the mature red cells and hemoglobin in the marrow.

FEDERAL MONEY AIDS IN MEDICAL RELIEF

According to a rule promulgated, June 23, by the Federal Emergency Relief Administration, state emergency relief administrators must provide adequate medical service for persons on relief rolls. The administration has now issued rules, which appear as Miscellany (page 1026) in this issue of *THE JOURNAL*, showing how this is to be done. Money granted to the states from the federal emergency relief fund may be used to pay for medical services and supplies for patients in their homes. All hospital expenses must be paid for from state or local funds. Federal money is not to be used to support existing medical, dental and nursing relief services but only to augment those services. State and local relief agencies are expected to operate through agreements with the organized medical, dental and nursing professions, state and local. Within legal and economic limitations, the traditional relations between patients and their physicians, dentists and nurses are to be maintained. Professional services rendered patients on relief rolls must be of the same type as those rendered private patients and are to be paid for at agreed rates, due allowance being made for the conservation of relief funds. The common aim, as stated by the administration, is the provision of good medical service at low cost, to the benefit of the indigent patient and the physician, nurse, dentist and taxpayer. It is hoped that physicians will enter heartily into the spirit of these rules and join with the federal, state and local relief agencies in making them effective.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

September 26. Rickets.
September 28. Measles.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

September 30. Flesh and Blood Statistics.

² Wetzel, G.: Anat. Anz., *erganzungsheft* 53: 82, 1920. Mechanik, N.: *Ztschr. f. Anat. u. Entwicklungsgesch.* 79: 58, 1926.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—James G. McAlpine, Ph.D., of the U. S. Public Health Service, has been appointed director of laboratories of the state department of health to succeed the late Dr. Leon C. Havens.

Study of Typhus.—A campaign for the eradication of typhus will be launched in ten or twelve counties of southeastern Alabama, according to newspaper reports. The U. S. Public Health Service, with headquarters at Dothan, is conducting a study to determine the best methods of prevention and control of the disease. Dr. Adolph S. Rumreich is assembling the data.

CALIFORNIA

Personal.—Dr. Emily H. Emery has been appointed health officer of Emeryville, succeeding Dr. George Rothganger.—Dr. Ludwig A. Emge, San Francisco, associate clinical professor of obstetrics and gynecology at Stanford University School of Medicine, San Francisco, has been appointed clinical professor.

A Case of Human Plague.—A case of human plague has been reported at Whittier, Los Angeles County. According to *Public Health Reports*, the onset occurred July 31, and death, August 9. Two plague-infected ground squirrels were reported found, August 15, in a lot of thirty-seven squirrels shot on a ranch thirteen miles southeast of Tres Pinos, San Benito County.

Society News.—The San Francisco County Medical Society was addressed, September 12, by Drs. Thomas Addis on "Therapeutics of Bright's Disease"; Loren R. Chandler and Harry A. Wyckoff, "Treatment of Agranulocytosis with Nucleotide: Report of Seven Cases Successfully Treated in Primary and Recurrent Attacks of Agranulocytic Angina," and Stanley H. Mentzer, "Bile Peritonitis."—Dr. Paul J. Hanzlik, San Francisco, addressed the San Diego County Medical Society, September 12.

COLORADO

Society News.—The Colorado Hospital Association will hold its annual meeting at the Cosmopolitan Hotel, Denver, November 15-16.

Gift to Denver Society.—A rare old set of pharmacy pots, mortar and pestle, were presented to the Medical Society of the City and County of Denver, September 5, by Miss Helen Bonfils in memory of the late F. G. Bonfils. Mr. Philip Hornbein gave the presentation speech and Dr. John W. Ames responded for the society. Dr. Frank W. Kenney represented the trustees, who became permanent custodians of the gift. The drug pots are blue and white Delft ware. The mortar is solid bronze bearing the date 1639. The set will be added to the medical museum which the society is acquiring. Dr. Eldridge L. Eliason, Philadelphia, addressed the society at this meeting on "Fracture Wrecks and How to Prevent Them."

CONNECTICUT

Rabies.—The state department of health reports that during the twenty-seven years since the founding of the bureau of laboratories in 1905, a yearly average of thirty-three cases of rabies has been confirmed by laboratory examination. Rabies has been more prevalent in Connecticut during the past three years than for any three year period since the founding of the laboratory. The total number of dogs' heads in which rabies was diagnosed in the laboratory in the period 1930-1933 was 237, as compared with 186 in the period 1915-1918.

FLORIDA

State Arsenic Law Upheld.—Constitutionality of the state antiarsenic law was upheld in Sarasota, August 29, when Circuit Judge Albritton refused to enjoin the commissioner of agriculture and his enforcement officer from interfering with the marketing of grapefruit from arsenated trees. An excerpt from Judge Albritton's decision reads: "To permit the shipment of this arsenated fruit would not only be harmful to the

citrus industry and market but be detrimental to the public health." The injunction was being sought on the contention, among others, that the attempt to destroy and prevent shipment of arsenated fruit was an infringement on constitutional rights.

GEORGIA

Society News.—At a meeting of the Lowndes County Medical Society in Adel, July 11, Dr. Herbert C. Schenck, Alto, spoke on diagnosis and treatment of tuberculosis.—Speakers before the Tenth District Medical Society in Hartwell, August 9, included Drs. James M. Hull, Augusta, "Ocular Signs in Relation to General Diagnosis"; Guy O. Whelchel, Athens, "Failure of Left Ventricle," and Harold I. Reynolds, Athens, "Diabetes—Its Treatment in Relation to Arteriosclerosis." The next meeting of the society will be held at Augusta, February 14.—Dr. Henry J. Ault, Dalton, addressed the Whitfield County Medical Society in Dalton, August 8, on acute gonorrheal conjunctivitis.—The Jackson-Barrow Medical Society heard Dr. Ernest R. Harris, Winder, discuss amebic dysentery at its meeting in Jefferson, August 7.—Dr. Frank K. Boland, Atlanta, gave a paper on "Acute Intestinal Obstruction in the Negro" before the Fulton County Medical Society, Atlanta, August 17. Dr. Theodore Toepel discussed chronic arthritis before the society, September 7; Dr. Murdock S. Equen presented a case report on laryngeal cancer, and Dr. James J. Clark gave a clinical talk on examination of the colon.—The Ware County Medical Society heard Dr. Raymond L. Johnson discuss intracranial trauma in Waycross, August 2.—The Leon Moye Medical Society, embracing the counties of Montgomery, Toombs, Treutlen and Wheeler, was reorganized in Vidalia, July 27. Officers elected are Drs. Joseph E. Mercer, Vidalia, president; Jarrett W. Palmer, Ailey, vice president, and William W. Aiken, Lyons, secretary. The first of the society's monthly meetings in Vidalia was held, August 24.

ILLINOIS

Advisory Board for Care of Insane.—An advisory board to aid the department of public welfare in the care of insane and feeble-minded inmates of the state hospitals was recently appointed by the governor. Members of the board include:

Dr. H. Douglas Singer, state alienist, and professor of psychiatry, University of Illinois College of Medicine.

Dr. Lewis J. Pollock, professor of neurology, Northwestern University Medical School.

Dr. Francis J. Gerty, associate clinical professor of psychiatry, Loyola University Medical School.

Dr. Ernest E. Irons, dean and clinical professor of medicine, Rush Medical College.

The new board, principally a research and education commission, plans a closer relationship between the hospitals and medical schools of the state.

Chicago

Program on Traumatic Surgery.—The Institute of Traumatic Surgery presented a program, September 13, before the convention of the International Association of Industrial Accident Boards and Commissions as follows:

Dr. Nathan S. Davis III, Difference Between Backache Due to Trauma and That Due to Disease.

Dr. John D. Ellis, Routine Examination of the Injured Back.

Dr. Paul B. Magnuson, Congenital Anomalies and Arthritis as Contributing Causes in Injuries of the Spine.

Dr. Hollis E. Potter, The Wedge-Shaped Vertebra; Some Distinctions Between Healed Fractures and Healed Vertebral Disease.

Dr. Claud R. G. Forrester, Reduction of Disability by Fusion of Vertebrae After Back Injury.

Dr. Philip H. Kreuscher, Shortening the Period of Disability After Fractures of the Spine.

Dr. Leroy P. Kuhn, Final Disposition of Back Injury Cases.

INDIANA

Personal.—Drs. Katherine E. Jackson and Arthur E. Moravec have been appointed school physicians of Fort Wayne.—Dr. Thomas P. Rogers has been appointed physician to the Indiana State School for the Deaf, succeeding Dr. Ora W. Ridgeway, who held the position for fourteen years.—Dr. Clifford L. Williams, Evansville, has been appointed superintendent of the Logansport State Hospital, succeeding Dr. Otho R. Lynch, resigned.

Short Courses in Tuberculosis.—The Indiana Tuberculosis Association is conducting short courses in tuberculosis for physicians throughout the state. Subjects discussed include laboratory aids; history, clinical study and physical examination of patients; treatment; differential diagnosis, and childhood tuberculosis. Practical demonstrations are held. The

course at Boehne Tuberculosis Hospital, Evansville, October 11-13, will comprise ward rounds entirely, the class to be divided into groups and each group to have one day. Other courses will be conducted at:

Lake County Tuberculosis Sanatorium, Crown Point, October 17-18.

State Sanatorium, Rockville, October 17-18.

Irene Byron Sanatorium, Fort Wayne, October 18-19.

William Ross Sanatorium, Lafayette, October 24-25.

Courses were conducted at Healthwin Sanatorium, South Bend, September 12-13, and at Sunnyside Sanatorium, Oaklandon, September 18-19.

IOWA

Iowa Heart Association.—This association will conduct its fall meeting at the State University of Iowa College of Medicine, Iowa City, September 30, when the following physicians will participate in the program:

Horace M. Korns, Iowa City, Right and Left Ventricular Heart Failure.

Daniel J. Glomset, Des Moines, Heart Block.

Aldis A. Johnson, Council Bluffs, Circulatory Accidents of the Heart.

Laurence E. Cooley, Dubuque, Luetic Aortitis.

Robert N. Larimer, Sioux City, Treatment of the Failing Heart in General Practice.

Julius S. Weingart, Des Moines, Transposition of the Great Vessels.

Walter L. Biering, Des Moines, Bullet Wound of Heart with Bullet Retained—Pardee RT Curve Persisting After Three Years—Complete

Right Bundle Branch Block in Patient Twenty-One Years Old with Rheumatic Heart.

Clifford D. Mercer, West Union, The Heart Specialist Himself.

George B. Crow, Burlington, Vasomotor Disturbances.

Mark C. Wheelock, Sioux City, Case of Multiple Aortic Aneurysms.

John C. Parsons, Creston, Sphygmomanometry in Heart Disease.

Frank M. Fuller, Keokuk, Congenital Heart Disease.

A symposium on experimental and clinical use of theophylline will be presented with the following speakers: Drs. Hyman M. Hurevitz, Willis M. Fowler, William D. Paul, all of Iowa City, and Herbert W. Rathe, Waverly.

MASSACHUSETTS

Hospital News.—A new ten story pediatric building of the Boston City Hospital was dedicated recently. The building is a memorial to Mary Emelia Curley, wife of Mayor Curley.

Society News.—The Hampden District Medical Society held its summer meeting at the Westfield State Sanatorium, Westfield, July 11. Dr. Roy Morgan, superintendent, presented a paper on "Practical Points in Tuberculosis" and Dr. Bernard Goldblatt, Westfield, "An Epidemic of Acute Nontuberculous Pulmonary Infections Characterized by Rapid Appearance and Disappearance of Lesions."

MICHIGAN

County Bulletin Changes Name.—*Detroit Medical News* is the new name adopted by the bulletin of the Wayne County Medical Society with the September 5 issue. The bulletin has also a new cover of modernistic design on which appears a reproduction of the recently acquired headquarters of the society.

State Medical Election.—Dr. George L. LeFevre, Muskegon, was inducted into the presidency of the Michigan State Medical Society at its annual meeting in Grand Rapids, September 11-14. Dr. Richard R. Smith, Grand Rapids, was named president-elect. The next annual session of the society will be held in Battle Creek.

Credit Plan Established.—A physicians' department of credit service has been established by the Wayne County Medical Society, cooperating with the Merchants Credit Bureau. The files of the bureau, containing the complete business history of more than 1,000,000 persons, will be open to members of the society. The society's bulletin points out that, with the units already established, the "Medical Relief Office" and the "Physicians' Bookkeeper," the new division will form a well rounded service to the physician who wishes to refer the business end of his practice to reliable personnel.

Personal.—Dr. Morley B. Beckett, former health officer of Isabella County, has been appointed county field agent for the state department of health; much of his time will be given to a study of the full time county and district health departments.—Dr. James A. Sinnott has been appointed psychiatrist to the Juvenile Detention Home, effective September 15. He succeeded Dr. Harry S. King.—Dr. and Mrs. Millard F. Stever, Thompsonville, observed their fiftieth wedding anniversary, August 27. Dr. Stever has practiced in Thompsonville for thirty-eight years.—Dr. Frank A. Kelly won the prizes for low gross in the Wayne County Medical Society's recent annual golf tournament, and Dr. Miln C. Harvey, those for low net.

MISSISSIPPI

Personal.—Dr. John F. Eckford, Starkville, has been appointed health officer of Oktibbeha County.—Dr. Archie L. Gray, formerly director of the Copiah County Health Department, is now in charge of the epidemiologic unit for the Mississippi State Board of Health.

Hookworm Survey.—The Rockefeller Foundation and Vanderbilt University are cooperating in a survey on hookworm disease in several counties in Mississippi in a special program promoted by the state board of health. A preliminary survey was conducted in Waynesboro and Wayne County.

Societies Merge.—At a meeting of the East Mississippi Medical Society, August 24, the counties of Kemper, Clark and Leake were officially united to the East Mississippi Medical Society. Dr. Frank H. Hagaman, Jackson, discussed "Resection of the Presacral Nerve for the Relief of Pelvic Pain," and Dr. Albert C. Bryan, Meridian, "Doctors' Business."

Fellowships Granted.—The Rockefeller Foundation has granted fellowships for a year's study at either Harvard or Johns Hopkins University medical schools to the following full time county health officers:

Dr. Norris C. Knight, Sunflower County.
Dr. Cecil J. Vaughn, Holmes County.
Dr. Alton R. Perry, Washington County.

During their absence, the work in Holmes County will be directed by Dr. James T. Gooze, and that in Sunflower County by Dr. Hugh B. Cottrell.

MISSOURI

Society News.—Speakers before the Jackson County Medical Society, September 19, were Drs. Joseph L. McDermott and John H. Ogilvie on bone tumors and pseudohermaphroditism, respectively. Dr. Carl F. Nelson, professor of physiologic chemistry, University of Kansas School of Medicine, will address the society, October 17, on "The Acid-Base Balance of the Body."

The St. Louis Encephalitis Epidemic.—A press dispatch, September 17, indicated that the encephalitis epidemic is decreasing in St. Louis County, although reports to the state board of health revealed that the outbreak had extended to the counties of Boone, DeKalb, Knox, Lafayette, Polk and Shelby. For the first time on that date, Infestation Hospital, St. Louis, had not received any new cases. The total number of deaths in the county reported up to September 16 was 149, and the number of cases was more than 800. In addition to the counties recently reported affected, the disease has also been evident in Montgomery, Nodaway and St. Charles counties.

New Code Concerning Immunization.—In accordance with a recently adopted code, immunization and treatment of school children in Kansas City will now be carried out by the family physician, under supervision of the Kansas City Health Department. Children of parents unable to pay will be cared for without charge at the Kansas City General Hospital by members of the Jackson County Medical Society. The recommendation for this action was accepted by Dr. Jabez N. Jackson, director of the health department, and was promptly made effective. Cooperating agencies in a study of the question were the Kansas City Pediatric Society and the committee on economics and the executive council of the county society.

NEVADA

State Medical Meeting at Las Vegas.—The thirtieth annual meeting of the Nevada State Medical Association will be held in Las Vegas, September 29-30, with headquarters at the Hotel Sal Sagev, and under the presidency of Dr. Ontie Hovenden, McGill. The following program of addresses will be presented:

Dr. Clarence G. Toland, Los Angeles, A Résumé of Goiter.
Dr. Eugene S. Kilgore, San Francisco, Newer Concepts of Coronary Disease.
Dr. William A. Shaw, Reno, Unusual Embryonal Developmental Error.
Dr. James F. Percy, Los Angeles, Proper Technique in Employing the Actual Cautery.
Dr. William H. Daniel, Los Angeles, Operability and Treatment of Rectal Cancer.
Dr. John C. Wilson, Los Angeles, Fractures About the Elbow Joint.
Dr. Barnett W. Wright, Los Angeles, Stone in the Kidney.
Drs. George Warren Pierce and Gerald Brown O'Connor, San Francisco, Practical Application of Reconstruction Surgery.

NEW JERSEY

Society News.—Dr. Henry H. Ritter, New York, addressed the Morris County Medical Society, recently, at New Jersey State Hospital, Greystone Park, on principles of traumatic surgery.—Publication of *Public Health News*, official bulletin of the New Jersey state department of health, which was suspended a year ago, was resumed with a July-August issue.

Low Infant Mortality.—New Jersey reported the lowest infant mortality rate (50) in its history in 1932. This rate is also the lowest reported by any Eastern state, according to *Public Health News*. The bureau of child hygiene of the state department of health also reports, among other things, that only five cases of ophthalmia neonatorum were found among 25,000 infants visited by representatives of the bureau. The general death rate for the state for 1932 was 10.11 per thousand of population, the lowest since the department of health was established fifty-five years ago. The death rates for typhoid, diphtheria and tuberculosis were all the lowest ever recorded in the state.

NEW YORK

Society News.—Dr. William J. Ryan, Pomona, addressed the Broome County Medical Society at Chenango Bridge, September 12, on "Childhood Type of Tuberculosis."—At a meeting of the Medical Society of Westchester County at Grasslands Hospital, Valhalla, September 19, Dr. Lisle B. Kingery, New York, directed an operative clinic in urology, and Dr. George C. Adie, New Rochelle, in general surgery. At the evening session cases were presented to illustrate practical points in treatment of renal, diabetic and cardiac cases by Drs. Maximin DeM. Touart, Bronxville; William P. Evans, White Plains, and Arthur F. Heyl, New Rochelle.

New York City

Diphtheria Immunization Campaign.—The city health department and the medical societies of the Bronx and Queensboro began an immunization campaign, September 18, to conclude with the health festivals, October 24 and 26. Children of parents unable to pay will be given free treatment at the baby health stations. The campaign marked the use for the first time in general practice of the new precipitated and redissolved toxoid, the health department reports. For the time being, however, the regular toxoid will be used for older children. This preparation has been so improved recently, it was stated, that only two injections one week apart are required.

Increase in Nonpaying Patients.—Use of outpatient clinics and dispensaries in the voluntary and municipal hospitals of New York reached a record volume of 6,688,215 visits in 1932, according to a recent study made by the United Hospital Fund, an increase of nearly a third since 1927. In city hospitals the use of clinics has more than doubled. Forty-eight of the fifty-six hospitals cooperating in the United Hospital Fund reported a deficit of \$1,283,621 for clinic service last year. In contrast, the number of days of care given to patients in private rooms in fund hospitals reached a low of 447,599 in 1932, compared with 703,343 in 1929. The fifty-six hospitals in the United Hospital Fund contain 15,845 beds.

County Society Aids Welfare Work.—Three hundred members of the Bronx County Medical Society in cooperation with health and social service agencies of the district are giving medical care to nearly 300 infants from needy families in response to a need created by the closing of five baby welfare stations, according to the August bulletin of the society. The Bronx Tuberculosis and Health Committee acts as the clearing house between the physicians and the agencies. Referral cards were distributed to the relief agencies, one half containing the patient's name and other information for the physician's file. The other half, containing a record of the treatment given, is mailed to the committee, which provides the clerical work for the plan. The physician has the final decision as to whether the patient is to be accepted for free treatment. If a case is rejected it is referred to the social agency for another investigation. The physician sees the child as long as he feels that care is needed or until the patient passes out of the free class. In each case the parent is given names of three physicians from which to choose. It is reported that no cases have been rejected thus far and that many instances of serious malnutrition and other disorders have been corrected which except for this service would have resulted in serious illness and death.

OHIO

State Medical Election.—Dr. John A. Caldwell, Cincinnati, was chosen president-elect of the Ohio State Medical Association at its annual meeting in Akron, September 8. Dr. Clyde L. Cummer, Cleveland, was installed as president.

Credit Association Organized.—The Toledo Physicians and Dentists Credit Association was recently organized as a central clearing house for the credit and collection problems of members of the Toledo Academy of Medicine. Only accounts of physicians, dentists and hospitals will be serviced by the association, and its operation will be under the control

of the academy of medicine. An academy advisory committee will function actively in all matters of policy and rates of commission. Members of this committee are Drs. Merit D. Haag, Walter W. Beck and Frank N. Nagel.

PENNSYLVANIA

Society News.—Dr. Chevalier Lawrence Jackson, Philadelphia, addressed the Lyncoming County Medical Society, September 8, at Williamsport, on hoarseness.—Dr. George W. Crile, Cleveland, addressed the Washington County Medical Society at McDonald, September 13, on the thyroid gland.

State Medical Meeting in Philadelphia.—The eighty-third annual meeting of the Medical Society of the State of Pennsylvania will be held in Philadelphia, October 3-5, with headquarters at the Bellevue-Stratford Hotel. General meetings will be held Tuesday, Wednesday and Thursday mornings, the two latter being scientific sessions at which guest speakers will be Drs. Dean Lewis, Baltimore, President, American Medical Association, on "Tumors of the Sympathetic System," and John Alexander, Ann Arbor, Mich., "Important Applications of Thoracic Surgery." Guests who will address sectional meetings include:

- Dr. William S. McCann, Rochester, N. Y., Bright's Disease: The Newer Orientation Regarding Classification, Pathogenesis and Treatment.
- Dr. William DeB. MacNider, Chapel Hill, N. C., Acquired Resistance of the Liver and Kidney to Certain Chemical Substances with Suggestions as to the Clinical Application.
- Dr. George J. Heuer, New York, Treatment of Acute Empyema.
- Dr. Sumner L. S. Koch, Chicago, Common Injuries of Nerves and Tendons of the Hand.
- Dr. Mark J. Schoenberg, New York, Newer Operations for Retinal Detachments.
- Dr. John J. Shea, Memphis, Tenn., Normal and Pathologic Development of the Sinuses.
- Dr. Ethel C. Dunham, New Haven, Conn., Conditions in New-Born Infants Associated with Cyanosis.
- Dr. John D. LITTLE, New York, Rational Treatment of Acute Nephritis in Children.
- Drs. Fred Wise and Marion B. Sulzberger, New York, Eruptions from Drugs and External Irritants.
- Dr. Francis R. Hagner, Washington, D. C., Sterility in the Male.

WASHINGTON

Society News.—Drs. William C. Speidel and Joseph W. Shaw, Seattle, addressed the King County Medical Society, September 18, on "Results of the Use of Nutrient Broth in Treatment" and Dr. Gordon R. Dempsay reported a case of carcinoma of the appendix.—Dr. Johan C. Wiik, Bellingham, has been appointed health officer of Whatcom County, succeeding Dr. Marion Le Cocq, Lynden. Dr. James H. Egan, Tacoma, has been appointed health officer of Pierce County to succeed Dr. Edgar F. Dodds.

GENERAL

Credentials Stolen.—Dr. Charles H. Feasler, formerly of Chicago, reports the loss of his diploma from Illinois University College of Medicine, showing his graduation, April 3, 1905, and his Illinois state medical license, dated June 1, 1909. These credentials were stolen from Dr. Feasler's car while it was parked in front of Central Park, Pasadena, Calif.

Hundreds of Automobile Fatalities in Four Weeks.—The bureau of the census announces that during the four weeks ended September 2 eighty-six large cities in the United States reported 638 deaths from automobile accidents as compared with 572 deaths during the four weeks ended Sept. 3, 1932. For the fifty-two week periods ended Sept. 2, 1933, and Sept. 3, 1932, the totals for all the cities were, respectively, 7,946 and 8,354, indicating a recent rate of 21.3 per hundred thousand of population as against an earlier rate of 22.8.

Change in Status of Licensure.—The State Board of Health of Kentucky has recently reported the following actions:

- Dr. Augustus G. Beam, Covington: license revoked at the February meeting.
- Drs. James F. Smith, Grahn; Ira Wellman, Louisa; William Blaine Carter, Lexington; Frederick A. Fitch, Catlettsburg; Thomas B. Helm, Paducah, and E. Lafayette Harmon, Corbin: licenses revoked and the revocations suspended on affidavit of each that he would surrender his narcotic permit permanently and that he would not personally use or prescribe narcotics in his practice.
- Dr. Archibald L. Johnson, Lexington: license revoked and the revocation suspended on his affidavit that he would not use or prescribe alcohol.

Meeting of School Physicians.—The sixth annual meeting of the American Association of School Physicians will be held at the Hotel Severin, Indianapolis, October 9-12, under the presidency of Dr. John Bruce McCreary, Harrisburg, Pa. Medical leadership in health service by state medical societies will be discussed by Drs. Roy R. Ferguson, Chicago, and Thomas P. Farmer, Syracuse, N. Y., and medical leadership in health service by educational authorities, Drs. Arville O. DeWeese,

Kent, Ohio, and Willis D. Gatch, Indianapolis. Other speakers include the following:

- Dr. Frederick L. Patry, Albany, N. Y., What Qualifications Should the Director of School Health Education and School Health Service Have?
- Raymond Franzen, Ph.D., New York, A Close-Up of Some Aspects of School Medical Inspection.
- Dr. Frederick K. Lam, Honolulu, Hawaii, School Medical Inspection and Health Service in Honolulu.
- Dr. Walter S. Cornell, Philadelphia, Prevalence and the Permanence of Defective Hearing as It Exists in School Children.

Society News.—The Inter-State Postgraduate Medical Association of North America will convene in Cleveland, October 16-20.—The American Prison Association will hold its sixty-third annual congress in Haddon Hall, Atlantic City, October 9-11. In addition to the program announced in THE JOURNAL, July 29, the medical section of the association will hear the following speakers:

- Samuel Joseph, Ph.D., New York, What Can the Sociologist Do in Rehabilitating the Prisoner?
- Walter M. Wallack, Albany, N. Y., The Education of the Prisoner as Psychotherapy.
- Maxwell J. Papurt, Ph.D., Napanoch, N. Y., Correction of Speech Defects Among Prisoners.

Survey of Research on Gonococcal Infections.—A Committee for Survey of Research on the Gonococcus and Gonococcal Infections has been formed by the Division of Medical Sciences of the National Research Council, in cooperation with the American Social Hygiene Association. It will collect, analyze and collate the facts already established and the efforts now in progress to add to knowledge of the gonococcus and gonococcal infections. Attention will be concentrated chiefly on work done in the United States. At the close of the preliminary survey, a report will be compiled to stimulate interest in the study of the gonococcus, to provide a point of departure and to suggest promising leads for further investigation. Dr. Stanhope Bayne-Jones, New Haven, Conn., is chairman of the committee, other members of which are Drs. Edward L. Keyes, New York, Walter Clarke, New York, secretary, and Francis Blake, New Haven, chairman of the division, ex officio. Headquarters have been established at room 1101, 450 Seventh Avenue, New York.

Conference on Child Health.—A national conference on child health recovery, under the auspices of the Children's Bureau, has been called by Secretary of Labor Perkins for October 6. The committee which is planning a national campaign to improve child health to follow the conference is made up of the following:

- Harry L. Hopkins, federal relief administrator.
- Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service.
- Louise Stanley, Ph.D., chief, bureau of home economics, department of agriculture.
- George F. Zook, Ph.D., commissioner of education.
- Dr. Frederick D. Stricker, Portland, Ore., president, Conference of State and Provincial Health Authorities.
- Dr. Albert J. Chesley, St. Paul, secretary, Conference of Health Authorities.
- Dr. Elizabeth M. Gardiner of the New York State Department of Health.
- Dr. Mary Riggs Noble of the Pennsylvania Department of Health, Harrisburg.
- Dr. Lillian R. Smith of the Michigan Department of Health, Lansing.
- Homor Folks, LL.D., secretary, State Charities Aid Association, New York.
- Dr. Kenneth D. Blackfan, professor of pediatrics, Harvard University Medical School, Boston.
- Dr. Howard Childs Carpenter, Philadelphia, representing the American Child Health Association.
- Dr. Samuel McC. Hamill, Philadelphia, representing the Academy of Pediatrics.
- Dr. Julius H. Hess, Chicago, representing the Section on Diseases of Children, American Medical Association.
- Dr. Richard M. Smith, Boston, representing the American Pediatric Society.

American College of Surgeons.—Clinics and demonstrations have been arranged for the meeting of the American College of Surgeons in Chicago, October 9-13. In addition there will be a number of symposiums. Dr. William D. Haggard, Nashville, Tenn., will deliver the presidential address on "Surgeon of the Wilderness—Ephraim McDowell," and an inaugural address on "Surgery, the Queen of the Arts." Dr. Loyal Davis, Chicago, will deliver the John B. Murphy Oration on "The Story of a Master Surgeon," and Dr. William E. Gallie, Toronto, the Fracture Oration on "Treatment of Fractures Involving Joints." Foreign guests who will participate in the program include:

- Harold Beckwith Whitehouse, professor of midwifery and diseases of women, University of Birmingham, England, Mastopathy and Chronic Mastitis.
- Vittorio Futti of the Rizzoli Institute, Bologna, Italy, Operative Lengthening of the Femur.

Among other speakers will be Drs. David Edwin Robertson, Toronto, on "Sympathectomy in Children," and Edgar L. Gilcreest, San Francisco, "Common Syndrome of Rupture, Dislo-

cation and Elongation of the Biceps Brachii: An Analysis of Fifty Cases." Symposia arranged for the evening sessions will be conducted by Drs. George E. Brown, Rochester, Minn., and Mont Rogers Reid, Cincinnati, vascular diseases, and Drs. George W. Crile, Cleveland, Howard C. Naffziger, San Francisco, and Edward D. Churchill, Boston, diseases of the thyroid. The program for the sixteenth annual hospital conference, arranged by the hospital standardization department of the college, will open Monday morning, October 9.

PHILIPPINE ISLANDS

Personal.—Dr. Rebecca Parish is reported to have resigned as superintendent of the Mary J. Johnston Hospital, Manila, and returned to the United States. Dr. Hawthorne Darby will succeed Dr. Parish, who founded the hospital in 1907.

Society News.—Dr. Jose Albert, among others, addressed the Manila Medical Society, June 13, on "Postgraduate Training of Physicians as a Pressing Responsibility of the Philippine Islands Medical Association."—At a recent meeting of the Cebu Medical Society, papers on Weil's disease were presented by Drs. Ismael Villarica, Eugenio Alonso and Rafael P. Abendán.—Drs. Jose L. Ignacio, Casimiro B. Lara and Alejandro Laureola, among others, presented a paper on "Severe Clinical Manifestations and Toxemia Due to Ascariasis," at a recent meeting of the Culion Medical Society.

FOREIGN

Session of the Deutscher Aerztetag Abandoned.—The Deutscher Aerztetag, which was postponed and later planned for the month of September, has now been definitely abandoned. The papers planned for the Aerztetag will not be presented. Presumably, the representatives of the medical profession will convene later in the year, after the adjournment of the Reichs-Aerzteordnung.

Baly Medal Awarded.—Dr. Robert Robison, of the staff of Lister Institute, London, has been selected to receive the Baly Medal of the Royal College of Physicians, awarded in alternate years to the person considered to have distinguished himself most in the field of physiology during the preceding two years. Dr. Robison's work has been on the esters of phosphoric acid and the enzyme phosphatase and the part they play in bone metabolism. The medal was awarded in 1931 to Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard University Medical School, Boston.

Personal.—Dr. Andrew Robertson of the London School of Hygiene and Tropical Medicine has been appointed to the Heath Harrison chair of organic chemistry at the University of Liverpool.—Dr. Ralph M. F. Picken has recently been appointed Mansel Talbot professor of medicine at the Welch National School of Medicine, Cardiff, Wales, to succeed Prof. Edgar L. Collis. Dr. Picken is medical officer of health of the city of Cardiff.—Prof. Erwin Stransky, professor of neurology and psychiatry, University of Vienna, has been elected honorary member of the American Psychiatric Association.

Pardon Refused for Professor Deycke and Dr. Altstaedt.—The request that Professor Deycke and Dr. Altstaedt, on whom sentences were imposed in the Lübeck trial (*THE JOURNAL*, July 8, 1933, p. 152), be pardoned, has been refused by the federal governor having jurisdiction. In justification of the refusal, the governor states that the welfare and the protection of the public are paramount and that the welfare of the individual must be subordinate. The confidence of the public in the physician must not be impaired by pardoning a member of the profession and allowing him to go free when found guilty of negligence. The physician is the appointed protector and guardian of public health. This office gives him notably in the national-socialistic state a preeminent position and a corresponding responsibility.

Courses in European Centers.—The Association of Lecturers for Medical Continuation Training in Berlin has arranged a course in practical application of modern investigations in internal medicine for October 2-14. Participating will be the second medical clinic of the Charité under Professor von Bergmann, the fourth medical clinic of the Moabit Hospital under Professor von Schilling, the Martin Luther Hospital under Professor Munk, and the Sanatorium for Diseases of the Lungs at Beelitz under Professor Cobet. Detailed programs for the course may be obtained from the association, Kaiserin Friedrich-Haus, Berlin NW 7, Robert Koch Platz 7. A course in diseases of the heart and blood vessels will be offered at the Hôpital Broussais, Paris, October 9-21, under the direction of Dr. Ch. Laubry. Information may be obtained from Dr. Dany at the hospital, 96, Rue Didot, Paris.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 2, 1933.

Progress of the Birth Control Movement in England

It has been shown (*THE JOURNAL*, July 15, p. 220) that the population of England is rapidly approaching a maximum, which it will reach in 1940, and that thereafter it will decline. This contrasts with the extraordinary increase that was brought about by the industrial revolution. In the nineteenth century the population of England and Wales rose from 9 to 32 millions. In 1876 the birth rate began to decline, and the decline has been practically continuous ever since. This has been attributed largely to the birth control movement, which was begun in that year by a well known politician, Charles Bradlaugh, publishing a book entitled "Fruits of Philosophy." For this he was prosecuted and sentenced to imprisonment, as the work was said to be "full of indecent physiological details." Ideas of what is "indecent" have altered considerably since that time and not only birth control but other medical subjects are discussed in newspapers with a freedom that would have been impossible a generation ago. The birth control movement has made progress in the half century since Bradlaugh's prosecution. This progress, like its inception, has largely been due to the work of lay persons, and the medical profession, with the exception of one prominent advocate, Dr. C. V. Drysdale, for a long time took no part in the movement. The publication of the works of Dr. Marie Stopes (who is not a physician but a doctor of science) has recently given further impetus to the movement, in which an important section of the medical profession has at last joined. The only opposition has come from religious persons, on the ground that birth control is immoral. The Roman Catholic Church is uncompromisingly condemnatory and its members in the medical profession attempted to organize some opposition. But nothing is heard of this now, not because the opponents have changed their minds but because they realize that they cannot check the movement. It has now too many influential supporters.

But it must not be concluded that the fall of the birth rate is due entirely, or even principally, to birth control. Another factor is that marriages take place later in life than formerly. Moreover, the advance of civilization, including urbanization (more than half the population is now urban) and the higher education of women, seems in some way that is not understood to diminish fecundity.

A sign of the times is that a medical journal, the *Practitioner*, has brought out a Birth Control number, to which prominent physicians contribute. Lord Horder, president of the National Birth Control Association, points out that the subject of birth control becomes less controversial every year. Dealing with the one contributor to the symposium who makes ethical objections, Lord Horder points out that of the two alternatives, whether to teach a husband and wife to limit the number of their offspring or to encourage them to let the weaklings of a large family die, he seems to favor the latter and presumably does not consider infanticide—for there is no essential difference between killing infants and letting them die—an offense against ethical standards. Havelock Ellis, the philosophical writer on sex subjects, points out that man has always restricted population by one of three methods—infanticide, abortion or sex tabus. The periods in which these checks worked as part of the accepted moral system are over, but the need for them is greater than ever because of the immense advances of medicine and hygiene, which have largely abolished epidemics, while the advances of civilization have diminished famines, two of nature's methods of limiting population. Dr. Eardley Holland, a gynecologist,

cologist, holds that contraception does not exert any injurious physiologic or psychologic effects, but he condemns the cervical stem as criminal. The discussion of methods does not reveal any advance.

Cleanliness in Fishing Boats

The Department of Scientific and Industrial Research has issued a pamphlet by Mr. Salter of the Torry Research Station, Aberdeen, enjoining greater cleanliness on trawlers, so that the fish may be landed in the best possible condition within the natural limitations of the general practice of stowage in crushed ice. It is explained that fish loses its freshness from two causes. The first is the natural change after death and the second is bacteria, which are already present on the fish in negligible numbers when caught. The rapid deterioration of fish, as at present when caught and landed commercially, is due to bacteria with which they become infected during guttage and storage. While ice slows down the rate at which bacteria multiply, it is powerless to stop the multiplication completely and under existing conditions will not maintain fish fresh longer than six or seven days. But by means of greater cleanliness, the infection of fish can be kept as small as possible and they will remain fresh for ten or twelve days.

The Drug Traffic

The Permanent Central Opium Board has concluded its seventeenth session and adopted its report to the Council of the League of Nations. While there are indications that the world situation in regard to narcotics has improved in the last five years, the board expresses anxiety as to the developments in China, into which an illicit stream of traffic has flowed from the manufacturing countries in immense volume for many years. But this stream is beginning to dry up and factories of narcotic drugs are apparently springing up to fill the vacancy. The presence of foreign concessions, settlements and leased territories complicates a difficult situation. In several of them illicit factories have been discovered, of which some may have existed in the past. With the exception of seizures of cocaine, which were somewhat higher in 1932 than in 1931, there is a striking decrease in China in the quantities of other drugs seized. Unfortunately this may not be due to diminution of illicit traffic but to this being removed to the Far East. A summary of the comparison between 1931 and 1912 in regard to morphine and diacetylmorphine shows an increase of manufacture in Great Britain, a considerable increase in Germany, Russia and Japan, and increases in Hungary, India, Sweden and Holland, while there was a large decrease in Switzerland and some decrease in the United States. Manufacture was begun in Poland and Kwantung. As regards cocaine there was a decrease in manufacture in Germany and Russia and an increase in Great Britain, Holland and Switzerland, and manufacture has begun in Czechoslovakia.

Indian Medical Standards

The decision of the General Medical Council to withdraw recognition of Indian medical qualifications because they were not satisfied as to the standard maintained has been reported in previous letters. This decision provoked resentment among Indians, who ignored the reason for it. A committee was appointed in India to consider a bill for the establishing of a medical council for that country, with the object of safeguarding the international status of Indian medical qualifications. It has now presented a unanimous report in favor of a bill to establish a medical council in order to secure a uniform standard in higher medical qualifications and to arrange schemes of reciprocity with medical authorities in other countries. It is proposed that foreign qualifications should receive legal recognition for four years only and that thereafter any qualification not covered by an approved scheme of reciprocity should become invalid. Thus retaliation is to be used as a weapon against

countries that refuse to recognize Indian qualifications. It is to be noted that it is only for the Indian higher qualifications that recognition in other countries is sought. When European medicine was introduced into that vast country by the British, it was not found practicable to educate all practitioners up to the European standard and in the Indian army, where European medicine was first introduced, an inferior class termed "assistant surgeons" was formed.

PARIS

(From Our Regular Correspondent)

Aug. 9, 1933.

Labyrinthine Injuries in Workmen in Caissons

Mr. Jean Lestienne has published a study on labyrinthine injuries. He states at the outset that such injuries are more frequent and more grave in workmen in which the permeability of the eustachian tube is inadequate. Hence it is important from the standpoint of responsibility for occupational accidents, before engaging a man to work in compressed air, to give him an examination to discover whether his ears and nose are normal. Accidents occur either soon after entering the chamber of compressed air or during the decompression period. In the first case, if the compression is slow, one may observe dizziness and ringing of the ears. If the compression is too sudden, there may be violent pains in the ears, accompanied by headache with rotary dizziness, nausea, vomiting and pallor, with loss of consciousness. These symptoms begin to subside after the workman emerges from the caisson. Sometimes hemorrhages occur. The accidents of decompression are more frequent and more serious. They are more difficult to foresee because they depend less on permeability of the auditory tube. Some of the symptoms are associated with congestion of blood in the deeper parts, which predisposes to hemorrhages, while the condensation of the water vapor creates cold, which hampers peripheral vasodilatation. The other symptoms arise from the liberation of dissolved nitrogen in the blood, which forms gas bubbles, the origin of emboli that obstruct the blood vessels, according to the well known observations of Paul Bert. These accidents develop slowly and may appear several hours or days after the workman has come out of the caisson. The onset is always sudden, with rotary vertigo, sometimes followed by falling. In the patient one may observe pallor, nausea, vomiting, sweating, thready pulse, irregular breathing and headache. The auditory disorders are constant: ringing of the ears, whistling sounds, hyperacousia or deafness. During the succeeding days, these signs disappear completely, sometimes rapidly, sometimes slowly, or occasionally a permanent lesion of the organ of hearing and impairment of the equilibrium are noted. An exact prognosis is difficult to establish. The application of legal provisions for protection in engineering undertakings, and careful selection and surveillance of applicants for caisson work, will notably reduce the number of accidents. As treatment one may subject the injured workman to air pressure equal to that which he endured while at work. Inhalations and, if need be, subcutaneous injections of oxygen will render good service.

Meeting of French Assembly of General Medicine

The Assemblée française de médecine générale brings together in Paris, three or four times a year, practitioners from various parts of France, together with clinical instructors, who study in common some problem. The seventh session, held recently, was devoted to an inquiry as to the remote effects of pleurisy. Are pleurisy patients doomed to become tuberculous? The tuberculous nature of serofibrinous pleurisy, affirmed by Landouzy, can generally be shown by inoculation into the guinea-pig, and it cannot be denied that a tuberculous reaction is frequent. But this is not an absolute necessity. Many articles have appeared of late, particularly those of Widal and of Ravaut,

which have established that there are pleuritic exudates that are entirely independent of tuberculosis. This fact was brought to the attention of the assembly by the interventions of Mr. Lemierre, Professor Jousset and Dr. Courcoux. The documents brought from various regions of France by general practitioners, who have been able, over long periods of years, to observe in their clientele the remote results of pleurisy, establish that the conditions vary, particularly with the age of the patient at the time he contracted pleurisy, the family history, the occupation, and as to whether the patient has been living in the city or in the country. It was revealed by the discussion that patients who are properly treated have excellent chances of recovering completely if they are allowed plenty of rest until the pleural cavity has become completely dry and until the fever has long since disappeared; if, afterward, they are given fresh air treatment for several months under strictly hygienic conditions from the point of view of diet and the nature of the work performed, and if, finally, aid is given in the breaking up of adhesions by means of intelligently applied breathing exercises. But patients should not forget that tubercle bacilli may persist in a latent state in some part of their organism. The infection may again manifest its virulence through pulmonary or extrapulmonary lesions, if such patients take up a fatiguing occupation, under bad hygienic conditions, too soon after the clinical disappearance of their effusion. Economic conditions play a part in the matter. The well-to-do are in better position to give themselves the needed care than are their less fortunate compatriots. For this reason the assembly passed a resolution to the effect that the law pertaining to health insurance should provide these patients with the needed rest and grant them sickness benefits for a much longer time than is established at present, which does not exceed six months.

Action of Cobra Venom on Mouse Cancer

Previous research in France and in America has drawn attention to the effects of cobra venom, which has been used for the pain of inoperable cancer. It has been observed, in this connection, that this treatment retards the evolution of some neoplasms. Professor Gosset recently submitted to the Academy of Medicine a communication on this subject. Professor Calmette, who has had an intimate experience with cobra venom, supplied the venom to the experimenters. He wished to clarify the question by experimental research, concerning which he has now presented a report to the academy. He studied the action of this venom on the white mouse, in cases of spontaneous cancer and of grafts of adenocarcinoma. He found that when one injects the venom into the tumor, a breakdown of the tumor is produced. It becomes soft and evacuates its contents or becomes entirely absorbed after from ten to twelve injections of doses of venom, each of which represents the tenth part of the mortal dose for a mouse. Professor Calmette added that it might not be concluded from these experiments that cobra venom will cure human cancers, which are of a different nature and infinitely complex and varied. But there are, he said, sufficient reasons for continuing these studies, to which he wished merely to give an impetus. It is possible that anticancer therapy will find in this ferment-like product, which is so extremely toxic as elaborated by the salivary glands of certain poisonous reptiles, a valuable aid to surgery, radium or roentgen rays.

The New Dean of the Faculté de Médecine de Paris

Professor Balthazard, dean of the Faculté de médecine de Paris, for the past three years, did not desire to be reelected, in order that he might be free to devote himself to legal medicine and to service as expert witness before the courts. The assembly of professors proceeded, therefore, to elect, with a vote of 65 to 4, Prof. Gustave Roussy, professor of pathologic anatomy. Professor Roussy is an eminent anatomopathologist, who has published some excellent articles on the nervous system

and the glands of internal secretion. He is also a cancer specialist. He secured the aid of the general council of the department of the Seine for the establishment at Villejuif of the anticancer center of the Paris region, which is a complete organization, comprising a research institute, modern equipment throughout, a center for diagnosis, a hospital of 150 beds, and radiotherapeutic and curietherapeutic services. He has organized another cancer institute at the Faculté de médecine. Since 1929, he has been a member of the Academy of Medicine.

BERLIN

(From Our Regular Correspondent)

Aug. 14, 1933.

Changes in the Penal Code

It is reported that the government is planning to resume work on the revision of the penal code, which was interrupted by the incapacity of recent reichstags, due to political unrest. Some important questions have, however, been regulated, of which the following concern the physician: The maltreatment of animals is now declared to be a misdemeanor (*vergehen*) instead of a transgression (*übertretung*), and is hence more severely punished. Proof of the fact is furnished if an animal is wilfully maltreated. It is no longer necessary, in order to take legal action, that the misdemeanor shall be committed in public or in an especially offensive manner. Rapier duels of students, if the necessary precautions are observed, do not constitute a punishable offense. Under the preceding government, such duels had been prohibited, against which decision the surgeons and others had filed a protest (*THE JOURNAL*, July 19, 1930, p. 216).

He who, for purposes of abortion, advertises or recommends certain articles or procedures, or exhibits them to the general public, will be punished by a fine or imprisonment for a period not exceeding two years. This provision is not applicable if articles or procedures used for medically indicated abortions are advertised to physicians or to persons who deal legitimately in such articles or are advertised in medical or pharmaceutical journals. Punishment will be imposed on any person who publicly offers his services or the services of a third person for the performance of abortions.

This legislation remedies a defect that frequently manifested itself in the crusade against abortion; according to the old law, abortion was forbidden but publicity of the kind described was not expressly prohibited. Newspaper notices in which "midwives" offer their services and announce their connections with a "capable gynecologist" are, therefore, no longer permitted. For the medical profession these new legal enactments are of fundamental importance. They establish that abortion based on genuine medical indications is not subject to punishment, when demanded and performed by legally qualified physicians. Whether, according to the views of the new government, eugenic indications are acceptable has not been announced.

Another new section of the penal code provides that he who inflicts a bodily injury with the consent of the injured acts contrary to law only in case the act is an offense against good morals. The physician has now the assurance that operations are not contrary to law. This external form has been lacking heretofore.

The Apparent Increase in Cancer

A marked increase in the incidence of cancer has given rise to many investigations to determine the cause. Dormanns has reported the results of his investigation in the Pathologic Institute of the University of Munich, of which Professor Borst is director. This material accumulated during a period of several decades and appeared suitable for answering the following questions: Is the increase in cancer figures due to "better diagnosis"? Is it due to the increased representation of the older age groups? It was found that in the first and the third

decade of this century there was an almost equal number of negative erroneous diagnoses (in the third decade 1.5 per cent more than in the first). Every fifth cancer was not diagnosed clinically; then there were ninety and eighty-two cases, respectively, in which "cancer" was diagnosed although not present. It does not appear, therefore, that the theory of "better diagnosis" can be accepted as an explanation for the increase in statistical cancer mortality. The second theory (the increase in the older age groups) will explain, in the necropsy material, only about half of the actual increase in cancer cases. The study of this material discovers no just reason for denying that the alleged increase in cancer is genuine; nor is it able to prove that it is genuine.

Incidence of Epidemic Poliomyelitis in 1932

After the epidemic of poliomyelitis in the late summer months of 1927, outbreaks were observed in other countries—Sweden in 1929, the Netherlands in 1930, and Austria, Hungary and Switzerland in 1931, whereas in Germany, aside from a few local outbreaks, the disease was not widespread until 1931. During the period 1927-1932, the incidence of the disease in the German reich, according to the computations appearing in the *Reichsgesundheitsblatt*, was as follows:

Year	Number of Cases	Deaths	Case Mortality
1927.....	2,840	363	12.8
1928.....	996	150	15.1
1929.....	1,157	174	15.0
1930.....	1,363	129	9.5
1931.....	1,613*	180*	11.2
1932.....	3,735*	315*	8.4

* Preliminary reports.

The epidemic of 1932 caused a higher incidence of infantile paralysis than that of 1927, but the number of deaths was less. As in 1927 and in previous epidemics, most cases were observed in the late summer or fall of 1932, with the peak during the thirty-seventh to fortieth week. The summer peak appears almost simultaneously in all regions, so that the assumption of a progression of the epidemic is not supported by the notified cases. The affected areas are, however, not the same each year.

The Federal Commission for Combating Cancer

The Reichsausschuss für Krebsbekämpfung, which is under the direction of the federal minister of the interior, has created a scientific subcommittee for the promotion of cancer research. The work of the committee will be placed in charge of Professor Borst, pathologist, of Munich; Professor Heubner, pharmacologist, of Berlin, and Professor F. König, surgeon, of Würzburg. Eminent clinicians and investigators are attached to the committee, and they will collaborate as experts in the various fields associated with the cancer problem.

Aluminum and Cancer

From time to time one hears it alleged that aluminum vessels may cause cancer. In spite of the fact that, years ago, articles were published opposing any such idea (*THE JOURNAL*, Dec. 13, 1930, p. 1849), the federal bureau of health has thought it advisable to issue further statements. The bureau still holds to the belief that not the slightest proof has been furnished either in Germany or in any foreign country to show that the origin of cancer is causally connected with the use of aluminum cooking vessels or that the growth of cancer may be in any wise facilitated by such use. The decision of the federal bureau of health is based not only on statements in scientific journals but also on the results of its own animal experimentation with various aluminum compounds and its observations on man. In this connection it was even shown that aluminum is present in minimal quantities as a regular component of the tissues of man and animals. Aluminum that was ingested in foods known to

contain aluminum or, experimentally, in the form of pertinent aluminum compounds was not absorbed to the slightest extent by the digestive tract and was not taken up in demonstrable quantities by the organism.

Warning Against the Use of Zinc-Covered Cooking Utensils

In recent months, as announced by the Prussian ministry, several cases of poisoning have been traced to the use of zinc-covered vessels for the preparation of foods, particularly such as contain acids (salads, sauerkraut, berries, fruit juices, marmalades, and the like). The zinc dissolves in acid-containing foods and makes them injurious to health. The unpleasant metallic taste is often suppressed by other substances and thus remains unnoticed. The use of zinc-covered vessels in the kitchen for the preparation of foods is therefore a dangerous practice. Moreover, the use of zinc-covered vessels is prohibited by the law pertaining to the marketing of foodstuffs.

Merger of the Private Welfare Leagues

A previous letter (*THE JOURNAL*, July 29, p. 381) described the organization of welfare work under private organizations. A merger has now been effected between the former Deutsche Liga der freien Wohlfahrtspflege and the National-socialistische Volkswohlfahrt, with the title of Reichsgemeinschaft der freien Wohlfahrtspflege Deutschlands, which will be under the direction of the national-socialists. In place of the former seven chief leagues representing welfare work under private organizations there will be only four, as merged in the Reichsgemeinschaft: National-sozialistische Volkswohlfahrt (including the Deutscher Paritätischer Wohlfahrtsverband), Zentralausschuss für innere Mission, Deutscher Caritas-Verband, and Deutsches Rotes Kreuz. The task of the Reichsgemeinschaft will be (along with the simplification of welfare work) to eliminate uneconomic institutions and to get from the remaining establishments, along with the greatest possible efficiency and utilization, the highest performance. It will be the special task of the Reichsgemeinschaft to support among the German people the idea that self-help is better than foreign aid.

Decline of Rabies in Germany

During the past six years, the number of persons bitten by rabid, or supposedly rabid, animals declined considerably, and the year 1932 marked a further decline. Since, according to the announcements of the sanitary police, in 1932 only sixty-four bite injuries occurred, a decrease of nearly 50 per cent, as compared with the record for 1931, which was 126 cases, is recorded. As a result of the prophylactic treatment for rabies, no cases of morbidity or death followed the bite injuries.

PRAGUE

(From Our Regular Correspondent)

Aug. 26, 1933.

The Death of Dr. Feierabend

The State Institute of Public Hygiene of Prague has suffered a serious loss in the death of Dr. Bohuslav Feierabend, chief of the department of serology. He graduated at the Czech Faculty of Medicine in Prague in 1919 and became interested in bacteriology and serology in 1920, when Dr. Frederick F. Russell of the Rockefeller Foundation came to Prague in the course of negotiations between the Czechoslovakian government and the Rockefeller Foundation concerning the erection of the State Institute of Public Hygiene in Prague. Dr. Feierabend was sent then as a fellow of the Rockefeller Foundation to the United States, where he spent most of his time in New York in the laboratories of Dr. William H. Park. He studied also for some time with Dr. Benjamin White in Boston and Dr. George W. McCoy in the Hygienic Labora-

tory at Washington. After a short sojourn at the Pasteur Institute in Paris he came back to Prague in 1921 and became the right hand man of the first director of the State Institute of Public Hygiene of Prague, Prof. Pavel Kučera. In a relatively short period he built up a model department of serology, which won a high reputation on the whole European continent. He was the initiator of an agreement between the serologic departments of Poland, Yugoslavia and Czechoslovakia, according to which the serologic production of these three countries was divided according to a special plan. More recently, Denmark adhered to this agreement. In 1930 he was invited by the Turkish government to prepare in Ankara a plan for the organization of the serologic department in the newly established state institute of hygiene. Dr. Feierabend was the chief promoter of serologic and immunologic work in Czechoslovakia. Through his systematic publications he interpreted regularly to the Czechoslovakian medical profession the progress in these branches in the literature throughout the world. He supplied the country with biologic products of high value which not only were consumed by the Czechoslovakian market but were exported to surrounding countries. He published some thirty contributions on immunology, chiefly concerning anatoxins. During the last two years he was connected with the Czech medical faculty of Prague, where he lectured on immunology.

Development of the Pharmaceutic Industry

According to the present law in Czechoslovakia, no medicines can be sold in pharmacies the composition of which has not been made known to the public health authorities and approved by them. In late years, the French and German chemical industry made a great effort to flood the Czechoslovakian market with medical specialties and was able to stimulate the demand through intensive advertising. As a result, even the insurance bodies were forced to accept prescriptions of medicines of foreign origin in insurance practice. After the restriction of foreign trade, it was difficult to obtain foreign medicines which the market demanded. The local chemical industry then invaded the field and brought on the market similar medicines. Especially the importation of German proprietary medicines, which was intensified following the recent change of régime in Germany, has suffered losses. The pharmaceutical organizations have worked out a list of local products with detailed indications which they supply to the local physicians. It seems likely that the Czechoslovakian market for pharmaceutical products has been lost forever by foreign firms.

Professor Matiegka Honored

The founder of Czech anthropology, Prof. J. Matiegka, recently celebrated his seventieth birthday. Professor Matiegka was born in a provincial city near Prague and obtained his medical degree in that city in 1887. After graduation he practiced as a country physician and later obtained an appointment as a health officer in Prague. He began then to study physical anthropology, having been introduced into it through his friend the archeologist and ethnologist Niederle. In 1891 he began lecturing on anthropology at Prague University and finally gave up his public health profession, having obtained an appointment to a professorship of anthropology at the university. He served in 1921 as the dean of the Faculty of Science and in 1929 as the rector of the whole Charles University of Prague. He built up an institute of anthropology which is one of the best equipped in Europe. He published more than 200 papers. His chief interest was anthropologic questions connected with races in his own country. He believed that anthropology should not be confined to the museum and the laboratory but that the anthropologist should have a direct connection with life, collaborating especially with the teacher

and the medical inspector of school children. He founded in Prague a pedologic institute for the study of school children, where he combined the work of a school physician, psychologist, teacher and anthropologist. Dr. Aleš Hrdlička of the Smithsonian Institution of Washington and Professor Matiegka founded together the journal *Anthropologie*, in which papers are published not only in Czech with English summaries but some of them also fully in English. The Anthropologic Institute of Prague has published under Matiegka's direction several textbooks of anthropology. Similar institutes have been created at the universities of Brno and Bratislava. Forty years of his scientific work has brought him to the first rank of Czechoslovakian science and he is a member of scientific societies all over the world. The *Journal of Anthropology* published a special issue on the occasion of his seventieth birthday containing contributions by authors from Czechoslovakia, the United States, France, Holland, Italy, Poland, Portugal, Russia, Switzerland and Yugoslavia.

Attempt to Make Official Agents of Practitioners

The organization of the service of medical practitioners on Sundays and holidays is under discussion in local medical circles, in view of the new statute on medical practice that was put in force recently. The insurance societies are interested in the organization of medical service on Sundays because when their own physicians are not available the insured has a right to first aid from any physician who can be reached at the time and the insurance society is obliged to pay the physician the regular fee. In some places, physicians are protesting; they maintain that they are entitled to special remuneration for this service. It happens frequently that during the whole period of their service they do not receive any calls. Several complaints are pending against physicians who have refused to obey the order of a local authority to be available for Sunday service in a given period. This is another symptom of the general tendency in the country trying to transform slowly general practitioners into official agents of public health authorities.

Phthisiologists Organize

The Association of Phthisiologists of the Czechoslovakian Republic has been organized to unite the efforts of all physicians working in the tuberculosis field, whether in public health work, sanatoriums, dispensaries or preventorium. Physicians of all nationalities are admitted to membership. Several sections have been formed, one for sanatoriums and hospitals, one for dispensaries, one for field service, and so on. Dr. Jaroslav Jedlička, chief of the Institute for Research in Phthisiology at the Charles University of Prague, who initiated this body, was elected the first president. The association intends to devote its efforts entirely to the study of medical questions connected with prevention and treatment of tuberculosis.

Insurance Society Erects Its Own Hospital

A new hospital was opened recently in Brno for the treatment of accident cases. This is the first institution of that type to be established in Czechoslovakia. It was erected and will be maintained by the official accident insurance board for the province of Moravia. Up to the present patients who came under the accident insurance system were placed in general hospitals and the fees have been paid by the respective accident insurance body. The results have not always been satisfactory to the insurance agency, as it had no direct control over the patients while in the hospital. This experience led to the creation of a special insurance hospital placed directly under the jurisdiction of insurance authorities. The hospital was put in charge of a professor of surgery of the medical faculty of Brno, but the medical school has no official connection with the hospital. This measure shows the strong tendency in

insurance circles to do away with the dependence of insurance bodies on public hospitals and to care for their patients in their own institutions. If this tendency should prevail it would weaken the position which public hospitals now hold in institutional treatment.

BELGIUM

(From Our Regular Correspondent)

Aug. 5, 1933.

International Congress of Hospitals

The third session of the International Congress of Hospitals, which comprised about 400 representatives of twenty-three different countries, was held at Knocke-sur-mer in June. The chairman, Minister Carton de Wiart, emphasized the problem of preventive medical aid, and the need of hospitals coordinating their efforts in order to improve the quality of the returns on their investments. He elaborated also the subject treated by Prof. R. C. Cabot of Harvard University, who stressed the importance of the psychic factor in the care of patients.

Dr. Sand said that a hospital is judged not by the cost of its construction nor by the financial returns of its management but by the services that it renders. It is not sufficient to inquire what the expenditures were for personnel, food supplies, medicines, heating and illumination. Every department of the hospital must have its own budget, a proportional part of the general expenditures. That is the only way to discover possible economies, to determine the prices to be asked of patients, to evaluate the opportunities of acquiring new apparatus, to organize departments, to modify the regulations or the organization or, in a word, to know the performance of each of the hospital departments.

More important is the rôle of the hospital in relation to society. If the hospital is not merely the refuge of the poor but an institution where all classes of society go to recover their health; if its mission is no longer simply curative but also preventive, educative and social, the hospital becomes the universal health center. Its wards are supplemented by institutes of social hygiene: consultations for nursing mothers, anti-tuberculosis dispensary, dispensary against venereal disease, dispensary for mental hygiene, vaccination service, social service, service of visiting nurses.

At a time when the taxpayers are begging for mercy, a system should not be tolerated in which each hospital asserts its independence. Individualism is a thing of the past; it is burdensome and ineffective, said the president of the congress in closing, and he explained how, in his opinion, the desired centralization and cooperation can be realized.

A New Medical Journal

The first number of the *Bulletin de la prévoyance sociale et de l'hygiène* has just appeared. The new quarterly journal will contain accounts of the activities of the ministry created by the royal decree of Dec. 15, 1932. In the first issue is an eloquent preamble by Count Henry Carton de Wiart explaining the reasons for a concentration of the services assuring the progress and the functioning of social and private insurance or of mutual companies; encouragement of thrift; the care of persons injured in occupational accidents, of cripples and of mutilated persons; the development of reasonably priced homes; the care of the health and of hygiene; the protection of children, and the crusade against tuberculosis, cancer and contagious diseases, together with the promotion of cleanliness in urban and in rural sections. The issue contains a series of articles by Dr. P. Nélis on the seasonal variations in diphtheria, Dr. R. Sand on social insurance, and Dr. L. Delattre on the week set aside to awaken interest in the water supply. An account of administrative events, some well chosen news items, and book notices give this first issue a peculiar interest.

Uniformity in Fees

Dr. Gildemyn has endeavored to establish tables adapted to all parts of the country for figuring the fees in general medicine and in the specialties. He thinks that an end should be put to the extreme diversity in the evaluation of medical services. The speaker gave a complete classification of the interventions of general medicine and of the specialties. Opposite each type of medical service is a coefficient that gives the evaluation of that service in comparison with other forms of medical service.

Professor Vanverts of Lille demonstrated by concrete examples the need of making the fees for medical services more uniform. This enables the practitioner to give his undivided attention to therapeutics. At the close of the discussion, a committee was appointed to promote this idea.

Marriages

CHARLES EDWARD HOLDERBY, Williamsburg, Va., to Miss Frances Marion Trainum of Gordonsville, June 20.

ALEXANDER VANDERBURGH, Brewster, N. Y., to Mrs. Gladys H. Meldrum Burr of Pawling, August 4.

GEORGE EDWARD WATERS, Blackstone, Va., to Miss Virginia Clayton Martin of Charlottesville, June 24.

ALEXANDER MCNEIL COX, Greensboro, N. C., to Miss Thelma E. Beazley of Richmond, Va., June 24.

SPENCER BOYD MCCLARY, JR., Etowah, Tenn., to Miss Almarine Nugent of Hickman, Ky., July 31.

CHARLES NEILL SCOTT, Smithfield, W. Va., to Miss Florence Ryland Horton of Richmond, July 1.

JAMES COREY RIFFE, Covington, Ky., to Miss Mildred Hood Sweeney of Lexington, August 1.

PAUL GILBERT PETERSON, Chicago, to Miss Signe Marie Peterson of Orfordville, Wis., August 2.

EDWIN RAYMOND MICKLE to Miss Ann Meek Ware Austin, both of Tappahannock, Va., July 7.

IRA LIONEL HANCOCK, Creeds, Va., to Miss Mary Alice West of Newport News, June 24.

HERBERT A. CREGG, Methuen, Mass., to Miss Florence M. McCarthy of Winchester, in June.

CARL B. SOUTHARD, Russiaville, Ind., to Miss Clara Catherine Meek of Noblesville, June 26.

FRANK ANDES STRICKLER, Bridgewater, Va., to Miss Sylvia E. Shafer of Troutville, June 24.

CHARLES SINGLETON DODD, Petersburg, Va., to Miss Cordelia Powell Broadus, July 8.

FRANK MORSE NICHOLS, La Grange, Ind., to Miss Nedra Hildebrand at Howe, June 24.

EARL WEBSTER GREEN, Wiggins, Miss., to Miss Grace Cowley of Amory, July 2.

ERWIN PAUL LUDWIG, Berlin, Wis., to Miss Luella Hoelter of Luckey, Ohio, July 26.

PETER ALLEN HALEY, Charleston, W. Va., to Miss Mary Alice Spillman, June 17.

EDWARD EMERSON, St. Paul, to Miss Marcia Smith of Minneapolis, July 12.

JAMES WILSON CLARK to Miss Martha Ozita Hall, both of Chicago, August 5.

JAMES SAMUEL SNODDY, Haleyville, Ala., to Miss Jane Lakeman, July 22.

KENNETH E. FRITZELL to Miss Stella Houge, both of Minneapolis, recently.

STEPHEN DANA SUTLIFF, JR., Philadelphia, to Miss Dorothy Wood, June 24.

BRONSON SANDS RAY to Miss Muriel Weeks, both of New York, July 29.

CARL J. RUDOLPH to Miss Hazel McSorley, both of Cleveland, recently.

JOHN ALONZO COWAN, Flaxton, N. D., to Miss Clara Jackson, July 12.

Deaths

Lawrence Ryan ☉ Chicago; Rush Medical College, Chicago, 1894; formerly assistant professor of surgery at his alma mater, professor of surgery and head of the department, Chicago College of Medicine and Surgery and clinical professor of surgery and dean, Loyola University School of Medicine; fellow of the American College of Surgeons; aged 70; for many years on the staff of the Hospital of St. Anthony de Padua, where he died, August 29, of lobar pneumonia.

Montie C. Comer ☉ Tucson, Ariz.; Kentucky School of Medicine, Louisville, 1907; member of the Pacific Coast Ophthalmological Society; served during the World War; fellow of the American College of Surgeons; on the staffs of St. Mary's Hospital and Sanitarium and the Southern Pacific Sanatorium; aged 48; died, July 25, in the Southern Pacific Hospital, San Francisco.

Harry Thomas Southworth ☉ Prescott, Ariz.; Chicago Homeopathic Medical College, 1901; past president of the Arizona Medical Association, Arizona Public Health Association and the Yavapai County Medical Society; fellow of the American College of Surgeons; health officer of Prescott; on the staff of the Mercy Hospital; aged 56; died, July 16, of angina pectoris.

Basil George Lambrakis, Chicago; National University of Athens School of Medicine, Greece, 1922; member of the Illinois State Medical Society; instructor in the department of laryngology, rhinology and otology, University of Illinois College of Medicine; on the staff of the Columbus Hospital; aged 35; died, September 1, of injuries received in an automobile accident.

Chalmers Melancthon Van Poole, Salisbury, N. C.; College of Physicians and Surgeons, Baltimore, 1880; member and past president of the Medical Society of the State of North Carolina; past president of the Rowan County Medical Society; served during the World War; aged 78; died, July 28, of undulant fever.

Samuel Newbern Harrell, Tarboro, N. C.; University of Maryland School of Medicine, Baltimore, 1897; member of the Medical Society of the State of North Carolina; fellow of the American College of Surgeons; on the staff of the Edgecomb General Hospital; aged 58; was drowned, August 6.

John Sebastian Fox, Los Angeles; Rush Medical College, Chicago, 1901; formerly mayor of Silverton, Colo., and member of the state legislature of Colorado; served during the World War; for eight years member of the city health department; aged 61; died, August 4, of angina pectoris.

Robert Blee Drury ☉ Columbus, Ohio; Starling-Ohio Medical College, Columbus, 1908; fellow of the American College of Surgeons; on the staffs of the Grant, Mount Carmel and St. Ann's Maternity hospitals; aged 55; died suddenly, August 19, of heart disease.

Eli Atchison Johnston, Amarillo, Texas; St. Louis Eclectic Medical College, 1877; Memphis (Tenn.) Hospital Medical College, 1887; member of the State Medical Association of Texas; past president of the Potter County Medical Society; aged 83; died, August 3.

Joseph N. Fireline, Owensboro, Ky.; University of Tennessee Medical Department, Nashville, 1898; aged 64; died, August 25, in the Owensboro City Hospital, of injuries received when he fell from his automobile, which had been started while in reverse.

Charles McArthur ☉ South Orange, N. J.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; aged 57; was drowned, August 20, while returning from a fishing trip in the Atlantic, during a storm.

Lawrence R. Clary ☉ Pekin, Ill.; Chicago College of Medicine and Surgery, 1913; formerly coroner and deputy coroner; health officer of Pekin; on the staff of the Pekin Public Hospital; aged 50; died, August 28, of heart disease.

Justus Marchal Wheate, San Francisco; University of Louisville (Ky.) School of Medicine, 1893; psychiatrist to the Veterans' Administration; aged 68; died, July 19, in St. Mary's Hospital, of bullet wounds inflicted by a deranged patient.

John Bodel Smith, Durant, Okla.; Missouri Medical College, St. Louis, 1891; member of the Oklahoma State Medical Association; formerly superintendent of the State University Hospital, Oklahoma City; aged 65; died, August 6.

Charles Rufus Barlett ☉ Boonville, N. Y.; Jefferson Medical College of Philadelphia, 1896; past president of the Oneida County Medical Society; on the staff of St. Luke's Hospital, Utica; aged 65; died, August 21, of heart disease.

J. Rowe Bemisderfer, Steger, Ill.; College of Physicians and Surgeons, Baltimore, 1883; member of the Illinois State Medical Society; aged 76; died, July 27, in St. James' Hospital, Chicago Heights, of coronary thrombosis.

Oscar Martin C. Chamberlain, Rockport, Mo.; Ensworth Medical College, St. Joseph, 1904; member of the Missouri State Medical Association; formerly mayor of Rockport; aged 51; died suddenly, August 14, of heart disease.

Orlando L. Stout, Upland, Ind.; Kentucky School of Medicine, Louisville, 1881; member of the Indiana State Medical Association; formerly county coroner; aged 79; died, August 13, of chronic myocarditis and angina pectoris.

Frank M. Kearns, Hundred, W. Va. (licensed, West Virginia, 1891); served during the World War; aged 64; died, August 21, in the Veterans' Administration Hospital, Huntington, of carcinoma of the rectum.

Freeman Ford Ward, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; member of the Medical Society of the State of New York; aged 79; died, August 22.

Francis H. Miner ☉ Washington, D. C.; Georgetown University School of Medicine, Washington, 1895; on the staffs of the National Homeopathic Hospital and the Sibley Memorial Hospital; aged 69; died, August 13.

Edmond Francis Shanahan, Hebron, Ill.; Creighton University School of Medicine, Omaha, Neb., 1910; member of the Illinois State Medical Society; aged 48; died, August 24, in a hospital at Elgin, of carcinoma.

Frederick W. Kruse, Weeping Water, Neb.; University of Nebraska College of Medicine, Omaha, 1902; member of the Nebraska State Medical Association; aged 70; died, in August, of cerebral hemorrhage.

William Robert Morrow ☉ Framingham, Mass.; Dartmouth Medical School, Hanover, N. H., 1889; formerly chairman of the board of health of Framingham; aged 68; died, August 6, of angina pectoris.

William Frederick Law, Syracuse, N. Y.; College of Physicians and Surgeons, Baltimore, 1896; on the staff of the Crouse-Irving Hospital; aged 62; died, August 22, of chronic myocarditis and nephritis.

Daniel Townsend Winter, Jr. ☉ Jersey City, N. J.; University of Vermont College of Medicine, Burlington, 1909; on the staff of the Jersey City Hospital; aged 48; died, August 26, of heart disease.

William Wallace Hadley, Sea Cliff, N. Y.; University of Buffalo School of Medicine, 1886; aged 68; died, August 13, in the Parkside Hospital, Glen Cove, following an operation for appendicitis.

Thaddeus Stanislaus Skladzien, Meriden, Conn.; New York Homeopathic Medical College and Flower Hospital, 1913; aged 44; died, July 24, in the Meriden Hospital, of cerebral hemorrhage.

William S. Barnes, Pilot Grove, Mo.; Beaumont Hospital Medical College, St. Louis, 1900; aged 61; died, May 29, in St. Joseph's Hospital, Boonville, of carcinoma of the liver and gallbladder.

Paul Caspers ☉ Chicago; Bellevue Hospital Medical College, New York, 1893; on the staff of the Illinois Eye and Ear Infirmary for many years; aged 65; died, August 25, of pneumonia.

Charles Leslie Sweetsir, Lowell, Mass.; Medical School of Maine, Portland, 1893; member of the Massachusetts Medical Society; aged 63; died, May 18, of carcinoma of the urinary bladder.

Cyrus Edwin Pringle, Akron, N. Y.; University of Buffalo School of Medicine, 1914; member of the Medical Society of the State of New York; aged 41; died, July 2, of heart disease.

Thomas H. P. Duncan, Mercedes, Texas; University of the South Medical Department, Sewanee, Tenn., 1901; aged 62; died, July 21, in a sanatorium at Temple, of malignant neutropenia.

Frank Perkins Keyes ☉ Brooklyn; Long Island College Hospital, Brooklyn, 1888; aged 75; died suddenly, August 18, at Sudbury, Vt., of cerebral hemorrhage and diabetes mellitus.

Benjamin F. Surryhne, Modesto, Calif.; University of California Medical Department, 1890; member of the California Medical Association; aged 66; died suddenly, July 19.

Jacobina Somerville Reddie, Seattle; Woman's Medical College of Pennsylvania, Philadelphia, 1905; aged 70; died suddenly, July 19, of cerebral hemorrhage and arteriosclerosis.

Albina Marie Palicek Norris, Riverside, Ill.; Hering Medical College, Chicago, 1895; aged 56; died, July 22, in the Martha Washington Hospital, Chicago, of coronary occlusion.

Gilbert D. Todd, Litchville, N. D.; University of Minnesota Medical School, Minneapolis, 1903; aged 53; died, in August, following an operation for ruptured appendix.

David Sherman ♂ Brooklyn; Long Island College Hospital, Brooklyn, 1896; formerly on the staff of the Samaritan Hospital; aged 61; died, August 21, of heart disease.

Alvin Daniel Stewart, Falconer, N. Y.; University of the City of New York Medical Department, 1877; aged 79; died, July 7, in the Jamestown (N. Y.) General Hospital.

William Lucius Rosamond, Birmingham, Ala.; Kentucky School of Medicine, Louisville, 1891; aged 64; died, August 12, of hypertrophy of the prostate and chronic nephritis.

Elmer E. E. McClelland, Olive, Calif.; Drake University Medical Department, Des Moines, Iowa, 1887; aged 72; died, July 24, in Los Angeles, of cerebral hemorrhage.

James Riley Stephens, Hackett, Ark. (licensed, Arkansas, 1903); aged 81; died, August 10, in a hospital at Fort Smith, of injuries received in an automobile accident.

Richard Leon Kendrick ♂ Elizabeth City, N. C.; University of Virginia Department of Medicine, Charlottesville, 1913; aged 48; died, July 26, of angina pectoris.

Otto Dibrell Bertram, Sunnybrook, Ky.; Medical Department of the Universities of Nashville and Tennessee, 1910; aged 49; died, August 1, of tuberculosis.

Albert Davis Sharp, Bedeque, P. E. I.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1915; aged 46; died, August 7, of coronary thrombosis.

Harry Leedom Smedley, San Diego, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1883; aged 74; died, June 25, of cerebral hemorrhage.

Milas Bready Raymer, Winston-Salem, N. C.; North Carolina Medical College, Charlotte, 1912; aged 48; was found dead, August 13, of heart disease.

Mabel Geneva Dixey, Fremont, Ohio; University of Michigan Homeopathic Medical School, Ann Arbor, 1893; aged 66; died, August 6, of heart disease.

Theodore Calvin Peterson, Spruce Creek, Pa.; University of Michigan Medical School, Ann Arbor, 1880; aged 81; died, July 4, of arteriosclerosis.

Daniel Whitfield Thompson ♂ Council Bluffs, Iowa; Nebraska College of Medicine, Lincoln, 1909; aged 49; died, August 13, of pneumonia.

George M. Carr, Marquand, Mo.; Missouri Medical College, St. Louis, 1879; aged 75; was found dead in bed, July 27, of cirrhosis of the liver.

Carl W. Henderson, Waynesville, Ohio; Starling Medical College, Columbus, 1897; aged 64; died, August 9, of pulmonary tuberculosis.

Samuel Franklin Casenburg, Knoxville, Tenn.; Tennessee Medical College, Knoxville, 1894; aged 66; died, July 30, of chronic myocarditis.

William Ryder Mathers, McKinney, Texas; College of Physicians and Surgeons of Chicago, 1884; died, August 11, in a local hospital.

Herman Frank Willard, Mexico, Pa.; Jefferson Medical College of Philadelphia, 1889; aged 75; died, May 30, of cerebral embolism.

J. B. Chase, Foreman, Ark.; Gate City Medical College, Dallas, Texas, 1906; aged 60; died, June 8, of cerebral hemorrhage.

Milton Emerson Jarnagin, Coburg, Ore.; Tennessee Medical College, Knoxville, 1897; aged 64; died, May 26, of chronic myocarditis.

Bayard Murray, Newark, Del.; Jefferson Medical College of Philadelphia, 1886; aged 73; died, June 5, of coronary thrombosis.

Liddy Carlino, Long Island, N. Y.; University and Bellevue Hospital Medical College, New York, 1933; aged 28; died, August 1.

Charles Pfeiffer, Chicago; Rush Medical College, Chicago, 1900; aged 59; died, August 27.

Bureau of Investigation

LASH-LURE

A Dangerous Aniline Hair Dye

A number of cases of severe poisoning have been reported from the use of a so-called "Eye Brow and Lash Dye" sold under the trade-marked name "Lash-Lure." The printed matter that has gone with the trade package gives contradictory information regarding the concern that puts it out. On the main label one finds: "Lash-Lure, Inc., 636 South Broadway, Los Angeles." Underneath this it is stated that it has been copyrighted in 1932 by "Lash-Lure Research Laboratory, Inc." In the circular that gives the instructions for applying Lash-Lure, the name is given: "Lash-Lure Laboratories, Inc., 636 South Broadway, Los Angeles."

A letter dated August 22, 1933, from Dr. C. B. Pinkham, Secretary-Treasurer of the California State Board of Medical Examiners, has the following to say about Lash-Lure:

"This product is distributed from the Dellar School of Beauty Culture, 636 Broadway, Los Angeles, which we understand is operated by Isaac Dellar, who first came to our attention when he wrote us from Portland, Oregon, May 20, 1930, asking for information relative to a California license, he stating he had graduated from the University of Oregon Medical School, Portland, 1917.¹ In his letter herein referred to, he stated that for four years prior to writing said letter, he had owned and conducted a haberdashery store at 320 Washington St., Portland, he relating that he intended to open a school of cosmetology in Los Angeles."

The first physician to report a case of poisoning following the use of Lash-Lure was Dr. Nelson Miles Black of Miami, Fla. Dr. Black wrote as follows:

"I am enclosing sample of eye lash dye which was used on a patient. Some got into the eyes during the application and caused severe ocular pain with marked edema of bulbar and palpebral conjunctiva and many petechial hemorrhages, some stringy secretion. The lids were very edematous, accompanied with severe itching."

On May 8, 1933, Dr. Sigmund S. Greenbaum of Philadelphia submitted a clinical note dealing with a severe dermatitis-conjunctivitis following the use of Lash-Lure, in which there was not only marked swelling of the skin, eyelids and surrounding skin, but a severe edema of the conjunctiva of one of the eyes. It was necessary to hospitalize the patient. This case was published in THE JOURNAL, July 29, 1933.

On June 3, Dr. Albert E. Leggett of Louisville, Ky., wrote asking for information on Lash-Lure, and stated:

I have a patient that has developed a severe conjunctivitis from this application with a blistering of the skin on the lower lid."

On June 20 Dr. A. W. McCally of Dayton, Ohio, reported a very severe case of poisoning following the use of Lash-Lure. There was a violent inflammation of both eyes and an infiltration throughout the entire thickness of the cornea. Secondary glaucoma developed, with ulcers on both corneas. There seems every likelihood that the victim will be totally blind.

On July 3 a letter came from Dr. Clyde E. Harner of Long Beach, Calif., who wrote:

"I have seen within a short period of time four cases of marked poisoning of the eyes from an eyelash dye called 'Lash-Lure.' All of these cases have run a very stormy course and the one I am seeing at present has caused corneal ulceration with, I believe, some permanent opacity. I am very anxious to learn the chemistry of this product and an antidote for the same, if there is a specific antidote. From the description of the application of the dye, I am inclined to think that this is probably of the paraphenylenediamine group."

On July 14 Dr. P. E. Wilson of Mayfield, Ky., sent in a specimen of Lash-Lure and stated:

"I have a patient who has developed a severe conjunctivitis, and I would like to know the composition of this medicine for that reason."

1. The records of the American Medical Association show that one Isaac A. Dellar, born in Portland, Ore., in 1892 was graduated in medicine by the University of Oregon Medical School, in 1917. No record of this man's licensure appears in the files.

On July 29 Mr. Earl H. Davis, an attorney of Washington, D. C., wrote stating that he had read Dr. Greenbaum's clinical note and went on to say:

"I am at present representing a client for an identical injury to her eyes from the use of the same dye, i. e., Lash-Lure, the treatment having been given by a local beauty shop. I understand, from my own personal investigation of my client's case, that there are at least four other such cases right here in Washington, on one of which suit has been filed in the Supreme Court of the District of Columbia against the beauty shop direct."

On August 1 Dr. Arthur J. Herrmann wrote from the Engstrum Hotel, Los Angeles, stating that he had read Dr. Greenbaum's article, and he then added:

"We have a case here in this hotel in which the eyes, forehead and face suffered second degree burns. The patient is in a very serious condition. Recently I have heard of another case that had such a severe reaction that resulted placing the patient in a hospital for several weeks."

Five days later Dr. Thomas G. Jenny of Pittsburgh, also having seen the case reported in *THE JOURNAL*, wrote:

"I would like to report that I have had a similar case as the one reported. This patient suffered from a severe conjunctivitis and blepharitis causing her to remain from work and to wear dark glasses. The patient had the Lash-Lure applied in a beauty shop in Pittsburgh and had practically all the symptoms and acute eye inflammation referred to in this article."

On August 8 a letter was written by Mr. Fred S. Herrington, an attorney in San Francisco, in which it was stated:

"I represent a young lady of this city who has suffered very seriously from the use of Lash-Lure and narrowly escaped, so her attending physician advises me, the loss of sight of one eye."

The indiscriminate distribution of dangerous drugs by irresponsible persons again emphasizes the need of an extension of the powers of the National Food and Drugs Act. Under the present law, drugs, no matter how powerful, how poisonous, how deadly, that may enter into cosmetics are not "drugs" under the definition of the Act because they are not sold for the prevention, mitigation or cure of disease.

Lash-Lure contains a dye of the aniline type. The A. M. A. Chemical Laboratory, which tested a specimen, reported that while it did not apparently actually contain paraphenylenediamine, it did contain a preparation of similar character. The dangers of using hair dyes of the aniline type, even on the hair of the scalp, is well known to all reputable beauty parlors, and usually such dyes will not be applied if the patient exhibits any sensitivity to the substance. Yet in Lash-Lure we have a potentially dangerous product sold to be applied to the eyelashes. Whether the victims of this preparation have redress at law against either the exploiter of Lash-Lure or the individual beauty parlors responsible for applying it is a matter for the courts to decide. However, money is a poor recompense for the loss of sight.

Correspondence

UNILATERAL CHOKED DISK DUE TO TONSILLAR INFECTION

To the Editor:—"Amicus Plato sed magis amicus veritas." As much as I respect *THE JOURNAL*, I am opposed to the theory of focal infection. I hope that you will publish this letter on account of the two cases reported in *THE JOURNAL*, April 22, by Drs. Wilson and Darkes entitled "Unilateral Choked Disk Due to Chronic Tonsillar Infection."

A few years ago the physician who hesitated to recognize the correctness of the theory of focal infection was considered a doubting Thomas. Doubt has crept into the minds of many since.

1. My first objection is to using the word "due" without making clear the causal relationship between the choked disks and the foci of infection in the tonsils. The improvement after the removal of the tonsils is not sufficient as such a proof.

2. Even elimination of all other causes for the choked disks would be insufficient as such a proof. In many cases the actual

cause of the disease remains unknown. Besides, elimination of all other causes is almost an impossibility. For instance, syphilis was eliminated on account of a negative Wassermann reaction. Who does not know that a negative Wassermann reaction does not preclude syphilis? Was an attempt to use mercury or iodine made? Even if the disease is not of syphilitic origin, those preparations give good results in some cases. How can the authors be sure that conservative treatment would not have helped?

3. Cases of unilateral choked disks are rare. Most are caused by some local strangulation of the nerve head due to periostitis of syphilitic or other origin, to a gumma or tubercle, to a local tumor, to a tenonitis, or to circulatory or endocrine disturbances. Cases claimed to be due to tonsillitis are unique in the literature. On the other hand, tonsillitis is so common that nearly every man during his life has repeated attacks of tonsillitis. If there were a causal relationship between tonsillitis and a unilateral choked disk, would one not expect frequent cases of choked disks?

4. The histories presented point to a papilledema rather than to an inflammatory condition of the disks. Why should an inflamed tonsil produce an edema and not an inflammation? What is the explanation of the mechanism by which such an edema is produced and why in only one disk? The only scientific way of establishing the causal relationship between a local focus of infection and an inflamed joint is to prove in the exudate the presence of the same micro-organism that has been found in the focus. It cannot be done in the cases of choked disks. Therefore, the assumption of such interrelationship is a mere speculation.

5. The first case started, March 12. The examination, July 9, showed that the swelling still was 0.5 diopter. It means that it took almost four months, and still the recovery was not complete. Many authors have seen cases of choked disks during the menopause, puberty, menstrual disturbances (Lourie, O. R.: *Ophthalmic Disorders of Endocrine Origin in Women*, *Arch. Ophthalm.* 54:469 [Sept.] 1925), normal menstruation and even hysteria, in which the choked disks have disappeared in a comparatively short time without any operative measures. In such cases time is the best remedy, especially if it is combined with blood letting.

6. In the second case it seems to me as though a tenonitis could cause the trouble. According to the history, the patient awoke in the middle of September "with pain in and over the right eye, and the vision of the right eye was blurred. The pain lasted two days, although at the time she was seen she complained of pain when she moved the right eye. . . . She had seen double on one or two occasions."

The presented picture may suggest such a diagnosis and will explain the choked disk and the recovery after the accumulation of fluid in Tenon's capsule was absorbed. I do not say that this was the cause but it might have been, taking into consideration that the patient was examined first by Dr. Goldberg, October 10, three weeks after the onset of the disease, when the edema of the bulbar conjunctiva and a slight protrusion of the eyeball could already have disappeared.

In order to proclaim and accept a theory of immense practical importance, one must build the theory on a firm foundation and not on vague uncertainties.

If the title of the case were "Improvement of Unilateral Choked Disks After the Removal of Tonsils," this letter would be superfluous. It is time to use proper definitions and avoid confusion.

O. R. LOURIE, M.D., Boston.

[The letter was referred to Drs. Wilson and Darkes, who reply:]

To the Editor:—It is difficult to answer the arguments of a physician who believes that hysteria may produce choked disk.

We agree that the theory of focal infection is greatly overworked, but on the other hand, we think that there is much merit in the theory. Involvement of one large joint of the body is not uncommon in focal infection and we have seen a number of remarkable cures following the removal of foci of infection in cases of that sort. Is it unreasonable to say that a unilateral choked disk might be due to the same agent? We are aware that a negative blood Wassermann reaction does not rule out syphilis but we firmly believe that a negative spinal fluid and blood Wassermann reaction with the spinal fluid negative all along the line is indeed rare in a person suffering from active neurosyphilis. We do not believe that either one of our patients had syphilis. There are many reports in the literature of tonsillitis as the cause of choked disk. The fact that tonsillitis is extremely common and infrequently produces choked disk does not rule out the possibility. We have seen many cases of choked disk, but we confess that we have never seen one due to the menopause, puberty, menstrual disturbances, normal menstruation and, according to our critic, even hysteria. How does he know that these cases, if they do occur, are cured by blood letting?

GEORGE WILSON, M.D., Philadelphia.

W. F. DARKES, M.D., Orwigsburg, Pa.

"CARITOL AND CAROTENE"

To the Editor:—On page 465 of *THE JOURNAL*, August 5, appears a letter of inquiry and your answer under the heading "Caritol and Carotene."

The S. M. A. Corporation regrets if it has given the impression that it makes any therapeutic claims for Caritol. While making no claims for Caritol beyond readily verifiable statements about its composition, we have made numerous references to the literature of vitamin A and carotene, a literature that is unusually rich in observations. As producers of carotene, we feel it our duty to bring such new information to the attention of practicing physicians.

Shastid's paper offered such revolutionary ideas that it seemed to us important to bring these results to the attention of ophthalmologists. Our object in doing this was to be of service in bringing the published material to the attention of interested specialists and thus to permit the earliest possible evaluation of a new method of cataract therapy.

W. O. FROHRING, Cleveland.

Vice President and General Manager,
S. M. A. Corporation.

FOOD HANDLERS' EXAMINATIONS

To the Editor:—May I explain a little more accurately the food handlers' examinations conducted by the San Diego, Calif., Health Department, referred to in *THE JOURNAL*, July 15, page 232. As I have direction of the city laboratory, I feel that a further statement of our aims and methods would be fair and may give some ideas to other health departments.

The value of the examinations, we believe, is twofold:

First, we believe that they diminish the probable transmission of an infection or a contagious disease from a food handler to his customer.

Second, it gives these men and women an annual physical examination and makes them more conscious of health matters both for themselves and for those with whom they come in contact.

Each person is given a physical examination and a sample of blood is taken for a Wassermann and a Widal test. A urinalysis is also done. In any case presenting symptoms or

evidence of any disease a throat culture, a smear for Vincent's angina and vaginal or urethral smears are made as indicated from the physical examination. Thus we feel that these selected groups are getting an annual examination that will benefit them as well as the public.

In case of a positive Widal test, if there is no history of previous typhoid or of an antityphoid vaccination, we examine the stools for a possible carrier condition. We feel that stool examinations would be of much more value than Widal tests in detecting carriers but our funds are very limited and it is utterly impractical with our present allowance to make satisfactory stool examinations in all these cases. As next best we are making the Widal tests.

We realize that there may be defects in this system and hope to be able to correct them. The amount of money available for this work is small but we are trying to do as much as possible. We believe that we are making some increase in the safety of the food handlers in their relation to the public. We would welcome any constructive criticism of our methods and hope we may be able to do more in the coming months.

H. A. THOMPSON, M.D., San Diego, Calif.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF MALARIA—ADMINISTRATION OF IRON IN SECONDARY ANEMIA

To the Editor:—1. One of the problems that I have encountered in my work here in Turkey is in connection with the splenomegaly, secondary anemia, ascites and hepatic hypertrophy arising from chronic malaria. I have felt that in cases of chronic malaria injections of sodium methylarsenate given with the quinine are useful. If the liver hypertrophy is due to the malaria, would the sodium methylarsenate be contraindicated? Is there any known method of dealing with the splenomegaly and liver hypertrophy due to chronic malaria? 2. I should also like to know a good prescription containing iron for use in the cases of severe secondary anemia, preferably in tablet or powder form. In a recent issue of *THE JOURNAL*, Ottenberg again emphasizes the inadvisability of the injection method of administering iron; yet he says that the need of large doses in oral administration is due to the low percentage absorption of the drug by that method. Moreover, he states that the total amount of iron in the body is not more than 3.5 Gm. Is there any information to be had on the intravenous use of iron cacodylate? What can be said for the administration of 1 Gm. of saccharated ferrous carbonate three times a day by mouth? Can you give a good prescription containing what would ordinarily be an adequate dose of reduced iron?

WILLIAM L. NUTE, M.D., Talas, Turkey.

ANSWER.—1. In the treatment of chronic malaria and its sequelae, medicine is only of secondary importance. Residence in a healthful climate—preferably the mountains—good nourishment, a quiet life and moderate exercise are the dominant considerations. Spices and alcohol should be avoided, as they are liver irritants. Iron and arsenic are useful for the anemia. Sodium methylarsenate probably acts chiefly as a blood restorer and in reasonable doses would not be contraindicated by malarial liver hypertrophy. Its chief toxic effects are exerted on the gastro-intestinal mucosa when it is given by mouth, and on the nervous system (especially the optic nerve) and the kidneys when given by injection.

2. Saccharated ferrous carbonate, which contains 15 per cent of the iron salt, is a good prescription for iron in powder form. Reduced iron is a good preparation to prescribe in pill form, 6 Gm. of reduced iron being divided into thirty pills and one taken three times a day after meals. As it is 90 per cent metallic iron, it furnishes more iron for possible absorption than does the carbonate. Iron injected intravenously does not exert a more powerful hematonic action than does iron given by mouth but it is much more toxic. Iron cacodylate is quite toxic when given intravenously and causes severe local reactions when injected hypodermically. It offers no special advantages over other methods of iron and arsenic administration. If one wants to give arsenic with iron, a dose of 0.002 Gm. of arsenic trioxide might be added to each of the pills of reduced iron, or 0.06 Gm. to the prescription for thirty pills.

"HORSETAIL", OR EQUISETUM, IN HAY FEVER

To the Editor:—A plant known under its botanic name *Equisetum hyemale*, with the common name horsetail or scouring rush, which grows abundantly in the Northern states, is being used as a household remedy for hay fever and apparently gives great relief by lessening the severity of the attacks when the victims of hay fever inhale the smoke of the dried leaves of this plant. If there is any reliable information of the virtues of this plant as a remedy would you kindly furnish me such information.

EUGENE PILE, M.D., Ashton, Kan.

ANSWER.—Horsetail (*Equisetum*), the sole genus of the botanic class *Equisetaceae*, is a genus of herbaceous plants growing from an underground much branched rootstock, from which spring slender aerial shoots, which are green, are ribbed, and bear at each node a whorl of leaves reduced to a toothed sheath.

There are twenty-five known species of the genus, which is universally distributed. *Equisetum hyemale*, commonly known as the Dutch rush, is especially abundant in Holland; it is used for polishing purposes.

The horsetails are remarkable for the large quantity of silica they contain in the cuticle (hence their value in polishing), which often amounts to half the weight of the ash yielded by burning them.

According to the National Dispensatory, horsetail contains no important medical constituents and its use is purely empirical. In China it has been used in ophthalmic practice. It contains an alkaloid, equisitin, which is poisonous to cattle. No mention is made to its use in the treatment of hay fever. A search of books and articles on hay fever and bronchial asthma revealed no mention of the use of horsetail.

"CAUDAL BLOCK IN OBSTETRICS"

To the Editor:—I have just read an article on "Caudal Block in Obstetrics" in *American Medicine*. Will you please answer two questions relative to this article: Have you reports from a sufficient number of observers to warrant confidence in the use of caudal (without sacral) anesthesia in obstetrics when possible? If 15 minims (1 cc.) of 1 per cent quinine and urea hydrochloride are added to 30 cc. of 2 per cent procaine hydrochloride to be introduced into the caudal canal for this purpose in order to prolong and add to the degree of anesthesia, is this procedure in agreement with good technic? With the exception of quinine and urea hydrochloride, I have read everything available to me on caudal anesthesia in obstetrics. This is the first operator who appears to be "sold" on the idea.

RICHARD A. IRONS, M.D., Thomasville, Ala.

ANSWER.—Attempts to alleviate pain during delivery with caudal (epidural, low sacral) anesthesia date from the work of Stoeckel in 1909, who together with other obstetricians, notably Schlimpert and Schneider of the Freiburg clinic, has introduced procaine into the epidural space for the purpose of relaxing the perineum and possibly the rigid cervix. Meeker and Bonar (*Surg., Gynec. & Obst.* 37:816 [Dec.] 1923) have given the various sacral methods a thorough and extensive trial in gynecology and obstetrics. It is obvious, however, that the low sacral block, produced with the customary procaine-epinephrine solution, lasts only about two hours, and that labor very frequently outlasts the period of anesthesia, thus making a reanesthesia necessary. Also the rapidity of delivery in multiparae makes it difficult to determine the proper time of injection. In order to make sacral anesthesia useful in obstetrics, solutions must be found which produce anesthesia for about six hours. The article referred to by the correspondent does not mention the concentration of quinine solution that is added to procaine. If it is a 1 per cent solution, as the correspondent mentions, the approximate dilution of quinine injected would be 0.03 per cent. If the quinine solution, of which 15 minims is added to procaine, is in 10 per cent solution, a concentration of 0.3 per cent would result, in which concentration quinine would be more apt to prolong the duration of anesthesia. The use of 0.5-1 per cent quinine solutions for prolonging anesthesia has been frequently recommended. But there is no such concentration known in which anesthesia could be prolonged without any actual tissue damage. To eliminate the danger of tissue necrosis, other quinine derivatives were searched for which, because of their increased anesthetic properties, could be used in weaker solutions. Thus de Takats (*Surg., Gynec. & Obst.* 43:100-105, 1926) studied the effect of iso-amyl-hydrocuprein (eucupin) on prolonging procaine anesthesia. While the drug is far more effective and can be used in 1:1,000 concentration, it was still not free from a tissue-irritating action. The more recent chemical discovery of nupercaine, another quinine derivative, however, permits the injection of 1:1,000 solutions without any tissue reaction. For sacral (caudal) anesthesia, 30 cc. of a 1:1,000 solution may be used. This has been employed for urologic work, among others, by Keyes and McLellan (*Am. J. Surg.* 9:108, 1930) who report anesthesia lasting from five to six hours. While some obstetri-

cians in Germany have infiltrated the perineum with nupercaine during labor, an investigation of sacral block during labor with this quinine derivative has not been brought to our attention. The drug is very potent, about ten times more effective than cocaine, but five times more toxic. Its use in obstetrics must be regarded as being in an experimental stage, although a thorough trial in a carefully controlled large obstetric service would be very well worth while.

INFECTIOUSNESS OF SYPHILIS

To the Editor:—I am giving active antisyphilitic treatment to a married woman who developed a chancre following clandestine intercourse, confirmed by Wassermann and Kahn tests. I would appreciate some information in regard to the infectiousness of syphilis, especially after the chancre has healed and there are no secondary cutaneous lesions or mucous patches. Is there any danger in kissing or intercourse if the patient is under active treatment and there are no primary or secondary lesions? Can the spirochetes be demonstrated in body fluids, such as sputum, saliva, sweat, vaginal secretions or prostatic and testicular secretions, when there are no lesions whatever in the body but the blood is positive? In other words, is it only by serous discharges from primary or secondary lesions, or by means of the blood itself, that syphilis is transmitted, or can this disease be transmitted to another person also by means of the various body secretions or excretions, if the syphilitic patient has no primary or secondary lesions, and contamination by the blood itself can be excluded. Please omit name.

M.D., California.

ANSWER.—In general the more recent the infection, the greater is the infectiousness of syphilis. The blood Wassermann reaction is not an infallible guide to infectiousness. Syphilis is transmitted chiefly by intimate contact of moist surfaces; i. e., by sexual intercourse, kissing, or occasionally through intermediate articles. If the patient is under active treatment and if the primary and secondary lesions have disappeared, the chances of infection by kissing or intercourse are minimized but the danger is by no means past. Spirochetes cannot be demonstrated in sputum or saliva unless mouth lesions are present. They have been frequently demonstrated in the vaginal, prostatic and testicular secretions in the presence of early, active syphilis. Uhlenhuth and Mulzer were unable to find *Spirochaeta pallida* in the saliva or normal urine of patients with active syphilis but produced experimental chancres in rabbits by inoculation of semen from patients with secondary syphilis. The transmission of syphilis by body fluids except in case of congenital syphilis is practically not a danger. The blood is the medium by which spirochetes are transmitted to the fetus. The spirochetes in the blood of persons with active syphilis are so few that accidental infection only rarely takes place, unless contamination with active syphilitic secretions has occurred.

SPASMODIC CONDITIONS OF LEG MUSCLES

To the Editor:—I am treating a man of 70 who has been suffering at intervals for several months from painful spasmodic contractions of the leg muscles. At times one leg will be affected more than the other, and judging by the resulting soreness the extensor and abductor muscles are most involved. The contractions are clonic and are at times so severe and exhausting that morphine is required to give relief. The contractions seem to be worse at night and wake the patient up. Often slight movement will precipitate an attack. The patient has been under treatment during the past year for arthritis, which has affected the knees and ankles. This arthritis was migratory in character with no temperature reaction, was nondeforming, and is apparently quiescent now. The patient otherwise is in good health and the essential conditions disclosed by physical examination include a moderately enlarged prostate gland and evidence of arteriosclerosis. I have been giving calcium gluconate waters, 20 grains, or 1.3 Gm., every two hours, in addition to hot compresses and general symptomatic treatment. The spasms continue about the same and I wish to inquire what else should be done. What is the prognosis?

C. F. BARBER, M.D., Felicity, Ohio.

ANSWER.—A definite conclusion is difficult from the information given. Bilateral clonic convulsions involving the muscles of both lower extremities, if on a neurologic basis, must be the consequence of disseminated pathologic changes. Arteriosclerosis would be a probable factor. However, there should be further evidence of an upper motor neuron lesion, such as a bilateral Babinski reflex. Also if the pathologic changes are on the basis of cerebral arteriosclerosis, the phenomena should not be limited to bilateral convulsions of the lower extremities, especially on the basis of cortical irritation.

The arthritis can have no relationship. The possibility of increased muscular irritability because of ischemia which might occur as the result of peripheral arteriosclerosis might be considered, although the symptoms described are not those of occlusive disease of the arteries. Observation of the condition of the peripheral arteries is indicated.

The possibility of calcium deficiency has been considered. The irritative muscular spasms of tetany are usually tonic. The muscles of the extremities are especially involved.

upper more often than the lower. Signs of muscle irritability, Erb's and Trousseau's, may or may not be present. Determination of the blood calcium should aid in diagnosis. In treatment, large doses of calcium should be used, alone or in combination with parathyroid hormone or viosterol. The effect on elevation of blood calcium would be of interest.

That uremia or other intoxication might be a factor seems unlikely from the description given.

URTICARIA OF UNKNOWN ETIOLOGY

To the Editor:—A woman, aged 34, has had urticaria, dating from two days subsequent to a tonsillectomy six years ago. In spite of careful investigation of the blood sugar, a Wassermann test, elimination diets and cholecystectomy for cholelithiasis, the cause has not been found. Skin tests to the number of thirty-seven, including the commoner causes—foods, animal emanations, hair, feathers, and a number of commoner bacteria—reveal nothing except an extremely positive reaction to *Bacillus coli*. There is no evidence of any infection anywhere in the body due to *Bacillus coli* or other organisms. Would regulation of the intestinal flora, if such is possible, also ascending doses of *Bacillus coli* vaccine, promise any probability of relief to this patient? Is it possible that the swallowing of blood after tonsillectomy might have anything to do with initiating the patient's allergic state, as her personal and family history reveals no such tendency? Kindly omit name.

M.D., Pennsylvania.

ANSWER:—Many cases of urticaria are stubborn and it is frequently difficult to find the cause. It would seem that this patient has been thoroughly examined. However, it is possible that some simple factor may be responsible, something like contact with a dog or cat or horse or perhaps with a hair mattress. If such contact exists, it should be completely eliminated. Drugs are frequent causes of urticaria, especially those containing quinine and amidopyrine. Cathartics may be factors. It is advisable to avoid all drugs except simple liquid petrolatum, if constipation exists.

The rôle of bacteria, such as *Bacillus coli*, is not clear. There is no conclusive evidence that bacteria cause urticaria. The strongly positive reaction to *Bacillus coli* would suggest that it might be advisable to give increasing doses of a vaccine made from this organism. There is little chance for harm and some hope for relief. Regulation of the intestinal flora might help, although treatment along this line is usually disappointing. It is possible that the blood swallowed at the time of operation may have been the precipitating factor, although the anlage (predisposition) was probably already present in the patient at that time.

SUCCESSIVE BIRTH OF HYDROCEPHALIC FETUSES

To the Editor:—A woman, aged 35, married, has had three pregnancies. The first and second pregnancies—one and three years, respectively, after marriage—both resulted in the birth of hydrocephalic monsters at about full term, said to have been dead before the onset of labor. The third pregnancy was terminated by induced abortion at four months by the family physician, who said he could not be sure from the development of the fetus at that stage whether it was abnormal. The mother has the physical appearance of robust health but has certain neurotic symptoms, a low basal metabolism and some other signs indicating a possible hypothyroidism. There has been some improvement, but not marked, on continued administration of thyroid substance. The Wassermann blood test is negative in both husband and wife. They are now desirous of having a normal child, and I am asked to advise them what the chances are in the event of another trial. Their chief dread is that they might have a live monstrosity. It is now five years since the last pregnancy. I have told them that it is not possible to predict the outcome with any certainty, that the prospect based on the history is not encouraging, and that they must be willing to assume a large part of the responsibility themselves. But I should like to know whether there are any statistics or data on which to base a rational prophecy in such a case. Please omit name and address.

M.D., Massachusetts.

ANSWER:—Hydrocephalus occurs about once in 1,600 (von Franqué) to once in 3,000 (Edgar) deliveries, and the occurrence of successive hydrocephalic fetuses in the same mother is extremely rare. In some of the older textbooks on obstetrics, reference is made to the reports of more than one hydrocephalic monster in the same family; Costelli observed two in one family, Göhlis observed six, and Peter Frank seven hydrocephalic fetuses from one mother. Reference to the original reports was not given, however (Winckel's *Lehrbuch der Geburtshilfe*, 1893). Iraeta and Harguindeguy report "Fetal Hydrocephalus in Successive Pregnancies" (*Semana méd.* 2:934 [Oct. 7] 1926). Apart from these, no references were found available on this point. An excellent bibliography accompanies Dandy and Blackfan's article on "Internal Hydrocephalus: An Experimental Clinical and Pathologic Study" (*Am. J. Dis. Child.* 8:406 [Dec.] 1914). The observation of successive births of hydrocephalic fetuses is indeed so unusual and interesting as to warrant its recording in medical literature.

OXYLIN

To the Editor:—I am in receipt of advertising from the Evons Laboratories for Oxylin Antiseptic Tablets in which appears a statement: "The official report, Council on Pharmacy and Chemistry of American Medical Association, says: 'It is a powerful antiseptic, somewhat stronger in this respect than mercuric chloride (bichloride of mercury) and considerably stronger than phenol (carbolic acid). Does not coagulate albumin or injure the mucous membranes or tissues.'" Is this true?

M.D., Pennsylvania.

ANSWER:—The advertising, as the correspondent brings out, gives the distinct impression that Oxylin has been accepted by the Council on Pharmacy and Chemistry, that the Council has issued a report on Oxylin, and that the quoted statement is taken from a report issued by the Council on Oxylin. This is not true. Oxylin does not stand accepted by the Council on Pharmacy and Chemistry. The entire advertising circular is not only bombastic and exaggerated, but throughout it gives the appearance of deception. On close examination of the literature it appears that Oxylin is a trade name for oxyquinoline sulphate. The quotation from the Council is from a number of years ago accepting a brand of oxyquinoline sulphate, not Oxylin. Furthermore, the statement is garbled in that it is not a direct quotation. The Council report brings out that although the antiseptic power of oxyquinoline sulphate is great, on the other hand "it is a feeble germicide, being weaker than phenol and much weaker than mercuric chloride."

The Evons Laboratories' letters carry the apparently unfortunate impression further by having printed underneath their name, in the advertising and on the stationery, "Accepted Pharmaceutical Products." None of the products of the Evons Laboratories stand accepted so far as the Council on Pharmacy and Chemistry is concerned.

Besides Oxylin, the firm also exploits Sanajel, "the original vaginal jelly." According to the advertising, Sanajel is apparently a lactic acid jelly of secret composition.

TOXIC EFFECTS OF ZINC SULPHATE

To the Editor:—Please give me information concerning the toxic effect of zinc sulphate assimilated through the skin, the respiratory tract or the gastro-intestinal tract.

F. P. BARROW, M.D., Portsmouth, Va.

ANSWER:—It is not known that zinc sulphate enters the body through the skin, but entry into the respiratory and gastro-intestinal tracts is well established.

McCord and his associates have published two papers dealing with the toxicity of zinc sulphate:

McCord, C. P.; Friedlander, Alfred; Brown, W. E., and Minster, Dorothy K.: An Occupational Disease Among Zinc Workers, *Arch. Int. Med.* 37: 641 (May) 1926.

McCord, C. P., and Friedlander, Alfred: An Occupational Syndrome Among Workers in Zinc, *Am. J. Pub. Health* 16: 274 (March) 1926.

The principal abnormality observed is irritation to the gastro-intestinal tract, leading to a high incidence of gastric or duodenal ulceration. The symptoms described include "marked anemia, pallor; gastro-intestinal manifestations of a character commonly associated with ulcer or preulcer conditions; constipation—abdominal distress, more marked when constipated; persistent headache." Other workers have observed a diarrhea, or an alternating constipation and diarrhea, in connection with the gastro-intestinal inflammation from this irritating agent.

PRIAPISM IN CHILDHOOD

To the Editor:—Will you please outline possible causes of priapism during sleep in a boy under 6 years of age, and discuss treatment? Please omit name.

M.D., New Mexico.

ANSWER:—Erections may occur during infancy and are frequently observed during childhood. They may be due to external irritation, such as phimosis or inflammatory conditions of the penis. Sometimes in children, as in adults, a distended bladder will cause erection. Urethral or vesical calculi, oxaluria and worms, especially *Oxyuris vermicularis*, may cause the condition. Spinal cord lesions below the cervical level may lead to a persistent and annoying priapism, and this is particularly true of caries of the spine, which produces severe cervical or dorsal compression. Priapism may be frequent in myelogenous leukemia. Some of the modern psychologic schools would consider that erections might occur at an early age as a result of the overactivity of the child's phantasy due to some psychic relationship.

Some slight genital weakness, organic or acquired, or accentuated through masturbation, may cause an earlier response of a physical nature. Erection may occur under some particular emotional stress; in an older boy, under the strain of a school

test or difficult task. The psychoanalysts say that in a younger child erection may occur when the child is bathed or the genitalia unintentionally handled by mother or nurse. It is desired to make the point that priapism in a young child may occur as the result of a lesion of the spinal cord or its meninges, or that it may result from vesical, genital or rectal irritation, or it is possible to concede that in a susceptible child it may be caused by stimulation of an erogenous zone. It is obvious that definite directions for treatment must depend on the diagnosis. A roentgen examination of the spine should be made to exclude a caries of a spina bifida occulta. Similarly, examination of the urine should be made for blood, oxalates or urates, and an examination of the stools to determine whether parasites or ova are present. If the bladder is overdistended at night, fluid should be diminished. The salt intake should be small or limited in amount. Obviously, the child should empty his bladder before retiring, and during the night if he awakens. He should be cautioned against masturbation.

REACTIONS TO WOOD RESINS OR OIL FOLLICULITIS

To the Editor:—A carpenter, aged 32, has at times during the last five years had papules beginning on the sides of the neck and later appearing on the cheeks and to a less extent on the forehead. On the cheeks they coalesce to form patches up to 25 mm. in diameter. These papules are deeply indurated and the large areas seem slightly more indurated at the margin than in the center. The color is normal or nearly so, but the lesions are conspicuous because they are elevated and have definite margins. There is no pain or itching. They begin soon after he finds employment and disappear soon after his period of employment is ended. He handles white pine, yellow pine, nails, tools, blue chalk and oil-stone, on which he uses kerosene. Mortar, cement and asphalt can be eliminated because the skin condition had begun when he had not been handling these materials. Can you give me any help on diagnosis, probable cause and treatment.

JOHN H. MURPHY, M.D., Geneseo, Ill.

ANSWER:—There are two possibilities in this case: 1. It may be a papular dermatitis due to sensitization to certain kinds of woods. The resinous dusts of woods, such as teak, and the oil from such woods may provoke a so-called wood workers' eczema or dermatitis, which may involve the face. Among other woods that are known to have an irritating effect may be mentioned some ebonyes, magenta, rosewood, West Indian boxwood, cocos wood, partridge wood, olive wood and satin wood. 2. It may be an oil folliculitis due to plugging of the follicles with oil or dust. In either case the disorder is obviously an occupational one and, outside of greater care as regards cleanliness and hygiene, treatment would probably be unavailing without a change of occupation.

MYASTHENIA GRAVIS

To the Editor:—What is the latest idea in treating a case of two-year myasthenia gravis in a man, aged 63, in good condition otherwise according to reports from the University of Michigan and Henry Ford hospitals? The past week he developed chills and fever and I found 2+ in the urine and gave methenamine; it made blood in the urine, so I stopped that and gave water. Would a focus in the prostate, or cystitis or pyelitis be the cause of the myasthenia diagnosis at the hospital mentioned? The patient tells me he has had "sometimes" for years off and on some obstruction in passing urine. He is bedfast as a result of the myasthenia. Ptosis of the eyelids was operated on. He has difficulty in swallowing and talking.

A. B. WALKER, M.D., WYANDOTTE, MICH.

ANSWER:—The latest treatment for myasthenia gravis consists in the administration of glycine (glycocoll), which is a gelatin sugar and is given by mouth, usually from 10 to 30 Gm. daily divided into two or three doses. Each dose may be followed by a dose of ephedrine, from one-eighth to three-eighths grain (0.008 to 0.024 Gm.). This treatment is fully described in the *Proceedings of the Staff Meetings of the Mayo Clinic* for Dec. 28, 1932.

BISMUTH COMPOUNDS IN LUPUS ERYTHEMATOSUS

To the Editor:—A man, aged about 55, has lupus erythematosus on both sides of the face, which seems to be giving a great deal of trouble. About two years ago he had a course of colloidal gold, which apparently cleared up the condition for a short time, but in about six weeks the condition returned. It is now giving him a great deal of discomfort and scales quite a bit. What would you suggest as a possible treatment for this type of condition? What bismuth preparations have been used?

AUGUST F. JENSEN, M.D., Rugby, N. D.

ANSWER:—Recurrences of lupus erythematosus occur not infrequently after the eruption has disappeared under the influence of gold treatment. There is no objection to the use of the same type of treatment again unless the patient has had untoward reactions during its earlier use. As an alternative treatment, probably the use of bismuth compounds would be most desirable. The latter method of treatment has been used

extensively in France and elsewhere with a considerable proportion of favorable results reported. McKenna (*Lancet* 1: 178 [Jan. 25] 1930) reported the results of twenty-four cases treated by injections of bismuth compounds. He used metallic bismuth, bismuth oxychloride or sodium bismuth thioglycollate. He reported that fourteen cases responded favorably, while in only four did the eruption disappear entirely. He noticed no difference in the results according to the bismuth preparation used. The soluble and the insoluble types gave the same results. Any standard bismuth preparations as used in the treatment of syphilis may be employed in this field.

MORPHINE OR TRIBROM-ETHANOL IN PARKINSONIAN SYNDROME

To the Editor:—I have a case of the parkinsonian syndrome as a sequel of epidemic encephalitis in which scopolamine and stramonium both furnish some relief but have disagreeable effects otherwise (vision, dryness of throat). Morphine added, in doses of from $\frac{1}{8}$ to $\frac{1}{4}$ grain (0.008 to 0.004 Gm.), helps eliminate the disagreeable effects of these drugs, but the patient, a highly intelligent woman of 40, fears acquiring morphine addiction. It has occurred to me that tribrom-ethanol might be used in sedative doses in a case like this, but so far I have found nothing bearing on this subject. I should be glad to know whether this drug has ever been tried as a sedative and, if so, how given and the dose. None of the barbituric acid derivatives have had any beneficial effects.

F. M. STITES, M.D., Hopkinsville, Ky.

ANSWER:—It seems that a patient suffering from the parkinsonian syndrome might be permitted the guarded use of morphine to antagonize the disagreeable effects of the drugs of the belladonna series. Tribrom-ethanol has been employed as a sedative in agitated mental cases, in which it has been used in the form of the commercial 2.5 per cent solution in doses of 0.1 Gm., repeated if necessary two or three times a day. It has been employed also in tetanus.

DANGERS IN ETHER ANESTHESIA

To the Editor:—The question has arisen and will soon be debated in court whether there is any danger in giving ether as an anesthetic for a tonsillectomy when the patient may have been drinking (alcoholic beverage) though clearly not under the influence at the time of preparation for operation. He was gone over by a physician who gave the anesthetic and pronounced a safe risk. A specialist then removed the tonsils quickly and without accident. After operation the pulse was good and, while a little rapid at first, soon became slow and regular all the time. Can you refer me to an authority or two who consider this alleged danger of ether after a drink or two? An easily found reference will be necessary, as the town does not afford a medical library. Please omit name.

M.D., Texas.

ANSWER:—It is impossible to say that the administration of ether under any circumstances is without any danger. If the patient's stomach was full, the risk was greater than it would have been for a patient with an empty stomach. However, judging from the description of the case, it is almost a certainty that the amount of alcoholic beverage that the patient may have been drinking did not increase the danger of administering ether to him. It is not uncommon for an alcoholic addict to take one or two drinks of liquor within an hour before receiving ether as an anesthetic, apparently without untoward result. Nonintoxicating amounts of alcohol ordinarily do not increase the danger of ether anesthesia.

The use of ethyl alcohol intravenously in doses to produce general anesthesia has been advocated (Constantin, J. D.: General Anesthesia by the Intravenous Injection of Ethyl Alcohol, *Lancet* 1:1247 [June 15] 1929; abstr. THE JOURNAL, July 27, 1929, p. 335). Tribrom-ethyl alcohol (Lundy, J. S.: The General Anesthetic Tribrom Ethyl Alcohol: Review of the Literature on Its Rectal and Intravenous Use, *Proc. Staff Meet., Mayo Clin.* 4:370 [Dec. 18] 1929) was introduced for the purpose of producing complete anesthesia. It is generally considered safe when given in doses which produce an effect which is more marked than is that of ethyl alcohol except in very marked stages of intoxication. Ether is given with safety after tribrom-ethyl alcohol has exerted its effect.

The description of this case does not indicate that the danger was greater than it usually is when ether is used for anesthesia.

EFFECTS OF INTRAVENOUS USE OF DILUTE HYDROCHLORIC ACID

To the Editor:—Will you kindly advise me what if any therapeutic effect would be obtained by the intravenous injection of 10 cc. of 1:1,500 hydrochloric acid. Please omit name.

M.D., Kansas.

ANSWER:—It would be chiefly by causing changes in the blood and tissue colloids that such injection would produce the effects of nonspecific "proteotherapy," with leukocytosis as one of its obvious results, and possibly also increased antimicrobial resistance.

BARGEN VACCINES FOR COLITIS

To the Editor:—Information is desired relative to the organism stated by Dr. Barga to be the cause of ulcerative colitis. Is it possible to obtain the vaccine from this organism? If so, what is the cost? Cultures have been made from a patient under treatment without success. The patient needs help but is without funds. If the vaccine is obtainable, I wish to give it a trial.

HORACE E. GROOM, M.D., Akron, Ohio.

ANSWER.—It has been thought wise to obtain the diplostreptococcus from the ulcers in the rectum through the sigmoidoscope from each patient with chronic ulcerative colitis. It is often possible to find the organism by this method when difficulty is encountered in isolating it from the rectal discharges or stools. It is well to use dextrose brain broth as a culture medium. The vaccine is then made as an autogenous one. A stock vaccine has been prepared by Parke, Davis and Company. A specific antibody solution (concentrated serum) is available in the pharmaceutical houses of Parke, Davis and Company, and Mulford (Sharp and Dohme).

TREATMENT OF PARKINSONIAN SYNDROME IN ENCEPHALITIS

To the Editor:—In THE JOURNAL, September 2, page 799, you mention the use of scopolamine, stramonium and atropine in the treatment of encephalitis. I should appreciate more specific and complete information regarding the indications and uses of these drugs in the treatment of this malady. Please omit name.

M.D., Missouri.

ANSWER.—These drugs are as a rule useful in the treatment of the rigidity, slowness of movement, and tremor of the parkinsonian state of chronic epidemic encephalitis. One will do better in one case and another in another case, so the thing to do is to begin with scopolamine, which usually acts the best, and later try the others if it fails. It is well to begin with small doses of any of these remedies and increase it from time to time. It must be understood that such treatment is palliative and not curative.

CALCIUM THERAPY IN INFLAMMATIONS OF ADNEXA

To the Editor:—I am interested in obtaining more information regarding calcium therapy in inflammation of the adnexa. I have in mind a patient who has suffered from chronic pelvic inflammation with acute exacerbations, who was operated on for ruptured ectopic pregnancy on the left side, and who one month after operation has still some tenderness in the right lower quadrant and a whitish, thick discharge, which has diminished gradually. Kindly omit name.

M.D., New York.

ANSWER.—Though calcium therapy in these cases aims to justify itself rationally, its experimental basis is not especially strong. There is a possibility that the nonspecific protein shock of the intravenous injection may be of greater importance in activating repair than the calcium itself, for similar results are claimed for various forms of nonspecific proteotherapy.

METHYLENE BLUE NOT INDICATED IN ACETANILID POISONING

To the Editor:—Would it be reasonable to assume that methylene blue might be an effective antidote to acetanilid as well as to carbon monoxide? If I am not mistaken, the damaging effect of each is due to methemoglobin in the red blood cells.

L. W. MECKSTROTH, M.D., Chicago.

ANSWER.—Probably not. The methemoglobin formation in case of acetanilid poisoning is of relatively slight importance in its syndrome of intoxication. Hence, even if methylene blue could prevent this change, this would not be of much value. One may well doubt that the methylene blue could prevent or antagonize the combination with nerve tissue, by which acetanilid produces its chief toxic effects.

PROSTATIC HYPERTROPHY

To the Editor:—A widower, aged 72, has a moderately enlarged prostate and complains of increasingly difficult micturition. Analysis of the urine gives negative results. No evidence of a malignant condition exists. What treatment, if any, should he take to prevent further enlargement? Is there any drug that has the slightest effect on the enlarged gland? Would marriage help any? Please omit name.

M.D., New York.

ANSWER.—There is no method available that with any reasonable prospect of success may be employed in order to arrest the progressive development of prostatic hypertrophy and hyperplasia. While a few authors claim that fractional doses of x-rays may produce such an effect, the pertinent reports are not very encouraging. There is no reason to believe that marital relations would have any influence on this condition.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY: *Written.* Boston, Chicago, Cleveland, New York, Philadelphia, St. Louis and San Francisco, Oct. 28. *Oral.* New York, Dec. 15-16. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B Candidates).* The examinations will be held in various cities of the United States and Canada, Dec. 9. Application necessary before Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

ARIZONA: Phoenix, Oct. 3-4. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

ARKANSAS: *Basic Science.* Little Rock, Nov. 6. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular.* Little Rock, Nov. 14. Sec., Dr. A. S. Buchanan, Prescott. *Homeopathic.* Little Rock, Nov. 14. Sec., Dr. Allison A. Pringle, Eureka Springs. *Eclectic.* Little Rock, Nov. 14. Sec., Dr. L. L. Marshall, 401 W. 3d St., Little Rock.

CALIFORNIA: *Regular.* Sacramento, Oct. 16-19. *Reciprocity.* Sacramento, Oct. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 3. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 14. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Regular.* Hartford, Nov. 14-15. *Endorsement.* Hartford, Nov. 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, Nov. 14. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 10. Joint Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 3. Dir., Mr. F. L. Cruikshank, Boise.

ILLINOIS: Chicago, Oct. 17-19. Supt. of Regis., Mr. Eugene R. Schwartz, Springfield.

MAINE: Portland, Nov. 14-15. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 14-16. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. J. E. McIntyre, 203-34 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 3-4. Sec., Dr. J. Charney McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Regular.* Minneapolis, Oct. 17-19. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 17-19. State Health Commissioner, Dr. E. T. McGaughey, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: *Basic Science.* Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 6. Sec., Dr. Edward E. Hamer, Carson City.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. P. G. Cornish, Jr., 221 W. Central Ave., Albuquerque.

RHODE ISLAND: Providence, Oct. 5-6. Dir., Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH CAROLINA: Nov. 14. Sec., Dr. A. Earle Booser, 505 Saluda Ave., Columbia.

TENNESSEE: Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

Virginia June Examination

Dr. J. W. Preston, secretary, Virginia State Board of Medical Examiners, reports the written examination held at Richmond, June 21-23, 1933. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. One hundred and forty-one candidates were examined, 140 of whom passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
City School of Medicine.....	(1933)	84	
chool of Medicine.....	(1932) 76,	(1933) 86, 88	
of Medicine.....	(1932)	76,	
77, 77, 78, 79, 80, 81, 82, 83, 83			
Tulane University of Louisiana School of Medicine.....	(1933)	86	
University of Pennsylvania School of Medicine.....	(1933)	92	
Medical College of Virginia.....	(1932) 78, 78, 80,		
(1933) 77, 78, 79, 80, 80, 80, 80, 81, 81, 81, 81,			
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University of Virginia Department of Medicine.....	(1929)	84,	
(1930) 83, (1931) 84, (1933) 77, 78, 78, 78, 79,			
80, 80, 80, 80, 81, 81, 81, 81, 82, 82, 82, 83, 83,			
83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84,			
85, 85, 85, 86, 86, 86, 86, 86, 87, 87, 87, 87, 88,			
88, 89			
College	FAILED	Year Grad.	Per Cent
Meharry Medical College.....	(1932)	70	

Eighteen physicians were licensed by reciprocity and 1 physician was licensed by endorsement from January 3 to July 21. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Kansas School of Medicine	(1928)	Kansas
University of Louisville Medical	Kentucky
Tulane University of Louisiana	Louisiana
Johns Hopkins University School of Medicine	(1913), (1926)	Maryland
University of Maryland School of Medicine	(1901)	Maryland
University of Maryland School of Medicine and Coll. of Physicians and Surgeons	(1921), (1929)	Maryland, (1932) N. Carolina
University of Michigan Medical School	(1925)	Michigan
University of Philadelphia	(1918), (1929)	N. Carolina
Jefferson Medical College of Philadelphia	(1918), (1929)	N. Carolina
Univ. of Penn. School of Med.	(1929)	North Carolina, (1930) Penna.
University of Tennessee College of Medicine	(1925), (1927)	Tennessee
Medical College of Virginia	(1929)	West Virginia, (1930) N. Carolina
College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Virginia Department of Medicine	(1923)	N. B. M. Ex.

Mississippi June Report

Dr. Felix J. Underwood, secretary, Mississippi State Board of Health, reports the written examination held in Jackson, June 21-23, 1933. The examination covered 12 subjects and included 96 questions. An average of 75 per cent was required to pass. Twenty-four candidates were examined, all of whom passed. Ten physicians were licensed by reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Howard University College of Medicine	(1932)	83.5
Emory University School of Medicine	(1933)	82, 84, 84.3, 85.8, 86
University of Louisville School of Medicine	(1933)	83.3, 89
Louisiana State University Medical Center	(1933)	87.1*
Tulane University of Louisiana School of Medicine	(1929)	87.4,
(1932) 85.8, (1933) 83, 85.7, 85.7
Jefferson Medical College of Philadelphia	85.3
University of Pennsylvania School of Medicine	86
University of Tennessee College of Medicine	84.1,
84.8, 85.4, 86.5, 86.8
Vanderbilt University School of Medicine	(1933)	82.8, 85.2, 88.5

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine	(1928)	Alabama
Northwestern Univ. Medical School	(1924)	Tennessee, (1931)
University of Illinois College of Medicine	(1931)	Georgia
Tulane University of Louisiana School of Medicine	(1925)	Louisiana
Western Reserve University School of Medicine	(1931)	Ohio
Meharry Medical College	(1932)	Tennessee
University of Tennessee College of Medicine	(1909)	Arkansas,
(1933) Tennessee
Baylor University College of Medicine	(1932)	Texas

*This applicant has completed his medical course and will receive his M.D. degree and Mississippi license on completion of internship.

Book Notices

Arteriosclerosis: A Survey of the Problem. Edited by Edmund V. Cowdry, Washington University, St. Louis. A Publication of the Josiah Macy, Jr., Foundation. Cloth. Price, \$5. Pp. 617, with 88 illustrations. New York: Macmillan Company, 1933.

The preface of this scholarly work states that the objectives are: "(1) to determine the data concerning arteriosclerosis which can be regarded as established and their relation to one another, (2) to discover and to definitely formulate the principal problems awaiting solution, and (3) to suggest the best means of attacking them." The first of these objectives is partially attained, the second objective is better handled, and the last is but barely touched on. With the exception of a few chapters, one misses the experience, logic and breadth of vision of the clinician. Editing by such men as David Riesman or James B. Herrick would add greatly to the value of the work. As it exists, it is cold, abstract and more than a little vague. There is relatively little correlation of the various aspects of this mighty problem. To illustrate the lack of appreciation of clinical physiology, it is notable that in the discussion of the relationship of hypertension to arteriosclerosis there is virtually no emphasis on the distinction between the significance of the systolic and the diastolic tension. It is inevitable that such compilations or "systems" do not include the more recent literature; it requires several years to build such a book and thus it fails to consider much of the newer significant contributions.

This vast subject is discussed by the contributors from many different angles: the history of the development of knowledge

concerning arteriosclerosis, the anatomic structure of the vessels, the physical properties of the vessels, the statistical aspects of the problem, arteriosclerosis in other species of animal than man, the relationships of race and climate and of nutrition to the disease, the pathogenesis of arteriosclerosis, experimental arteriosclerosis, the chemistry of arteriosclerosis, the relation of infection to the disease, retinal, cerebral, visceral, pulmonary and cardiac arteriosclerosis, the relation of hypertensive disease to arteriosclerosis, the hereditary factors and treatment. A final summary by Alfred E. Cohn attempts to correlate the data and conclusions of the previous chapters; here valid generalizations are made from the more detailed data.

The presentation of the development of the present knowledge of arteriosclerosis by Esmond Long is extremely interesting and splendidly written. The statistical studies of Edgar Sydenstricker are thorough and the conclusions logical and valid. The discussion of the pathogenesis of arteriosclerosis by William Ophüls is much less adequate. It is extraordinary that there is but the merest mention of the distinction between arteriolar sclerosis and arteriosclerosis. Anatomy is discussed by Edmund Cowdry and is a good presentation of the subject. Anitschkow's discussion of experimental arteriosclerosis is brilliant and considers the differentiation of the various types of arterial lesions far more fully than does the chapter on pathogenesis. The discussions of the rôle of infections and other etiologic factors is distinctly inadequate. Coronary arteriosclerosis, discussed by Howard T. Karsner, is splendidly handled, and the choice and excellence of the illustrations are exceptional. This author, in contrast to many of the other contributors, appears to have a truly clinical attitude. The chapter on the chemistry of arteriosclerosis by H. G. Wells is an exhaustive, complete analysis of the literature.

The book will have a distinct place in the literature on the perplexing problems of arteriosclerosis, although it contributes but little that is new. As a summation of existing knowledge it will be valuable for reference; investigators may prefer to study the original sources and clinicians will find it of relatively little assistance.

Diseases of the Heart Described for Practitioners and Students. By Sir Thomas Lewis, C.B.E., F.R.S., M.D., Physician in Charge of Department of Clinical Research, University College Hospital, London. Cloth. Price, \$3.50. Pp. 297, with 45 illustrations. New York & London: Macmillan Company, 1933.

In this book Lewis presents the subject of diseases of the heart with a simplicity that is almost biblical in profundity and conciseness. The author has utterly disregarded precedence and cardiologic folklore in his treatment of every subject. Only frank, crystallized pictures of disease are presented. Apparent facts which have not stood the test of careful clinical observation and experience are rejected. Academic classifications are replaced by a workable grouping of facts. In discussing methods of examination, laboratory procedures which have no important clinical significance are either ignored or merely mentioned. Here, also, one finds a refreshingly sincere and critical evaluation of physical diagnostic methods that is typified by the following statement of the author: "Very fantastic ideas have been and still are held of the accuracy that can be obtained by percussion." The thoroughly practical treatment of the observations in valvular disease and the methods of eliciting them is exemplified by the statement: "Much labor is lost and many ultimately fail to know the diastolic murmur of mitral stenosis through persisting in the effort to time, instead of learning to know it as one learns to know a dog's bark." Characteristic of the author's method of reducing the subject matter to a strictly practical aspect is his comment on the diagnosis of tricuspid stenosis: "I have not known the diagnosis, when made, to affect the management of any case." The keynote of the chapter on prognosis is well expressed in another statement by the author: "The only basis of prognosis is actual experience and theoretical consideration should never be allowed to weigh against this." The myocardial status as elicited by a few simple tests is given the greatest consideration. The author feels that only in the rarest instances does the valvular disease per se prove a burden to the heart. The traditional plan of division of chronic rheumatic heart disease on the basis of valve defect is discarded as too anatomic and too little expressive of the functional ability or deficiency of the heart.

The classification offered is given in brief as illustrative of the practicability and applicability of the author's conceptions:

- (a) Valvular disease the chief finding—prognosis good. Heart size normal. Compensation perfect.
- (b) Auricular fibrillation the chief finding—prognosis good but not to the degree in a. Quinidine indicated.
- (c) Central and chief group—heart enlarged, valvular disease present, mild decompensation symptoms. Prognosis fair.
- (d) Cardiac enlargement the chief finding. Usually free aortic regurgitation with poor reserve. Prognosis poor.
- (e) Venous congestion the main feature. Valve lesion is subsidiary and matters little. Prognosis poor.

The rôle of infection is discussed with relation to the foregoing grouping. Dogma and theory not supported by clinical experience are attacked. Typical are the author's statements: "Whether or not pain can be produced by the stretching or inflammation of nerves lying in the wall of an enlarged aorta is unknown. . . . Neither accentuated aortic nor pulmonic second tone is valid evidence of high arterial tension. . . . The pulse has little value in gauging the state of the cardiac muscle or the intensity of the first sound at the apex."

Angina as the expression of relative to absolute ischemia is clearly developed. The author still adheres to the English school with reference to digitalis, the administration of which in "heart cases merely because they are heart cases is to be discouraged." This is in contrast to the American tendency to use it prophylactically and in myocardial weakness without fibrillation.

The book on casual inspection gives the reader the impression of a condensed treatise on heart disease: The text is shorn of trivial detail and redundancy and only the unadorned fact is presented. It is a distinct contribution from the standpoint of subject matter, and its method of presentation will make many important facts readily available for practical use. This book is highly recommended to the students and practitioners of medicine. It is perhaps one of the most masterly presentations on this subject that has been presented to the profession.

The Joy of Living: An Autobiography. By Dr. Franklin H. Martin. Volume I: Personal and Professional Reminiscences. Volume II: The World War. Forewords by William J. Mayo, M.D., and George W. Crile, M.D. (Volume I), and by Newton D. Baker and Daniel Willard (Volume II). Cloth. Price, \$7 per set. Pp. 491; 526, with illustrations. Garden City: Doubleday, Doran & Company, Inc., 1933.

In two handsome volumes, typographically excellent, Dr. Franklin H. Martin makes available the record of his interesting career. After forty years of practice in gynecology and surgery he retired to devote himself more definitely to organizational work which, as practically all American physicians know, was primarily in the American College of Surgeons and in the publication of *Surgery, Gynecology and Obstetrics*. His account is preceded by two interesting prefaces, one by Dr. William J. Mayo, the other by Dr. George W. Crile, two men whose talents were largely associated with those of Dr. Martin in his constructive work.

The autobiography begins with the family record of Dr. Martin and tells of his early days in Wisconsin and Minnesota. Next he describes his career as a teacher and his work as a boy before he took up the study of medicine. Next comes the story of his senior year at the Chicago Medical College and his service in Mercy Hospital. In 1880 came his graduation and the beginning of his medical career. Next comes the story of how he began practice in Chicago. There are accounts of early medical clubs in Chicago and of interesting medical organizations. One hears of the development of the Chicago Gynecological Society, of Dr. Martin's first venture into medical literature, of the meeting with Isabel Hollister, daughter of Dr. John H. Hollister, and of her marriage to Dr. Martin.

From this time on the practice developed; the contacts in literature, art and medicine multiplied. A special chapter is devoted to the Mayo Clinic and then to the founding of *Surgery, Gynecology and Obstetrics*. There are also the intimate details of the founding of the Clinical Congress and of the American College of Surgeons. Other chapters deal with the work of Dr. George W. Crile and of William Crawford Gorgas. These discussions occupy the first volume.

The second volume is concerned almost wholly with the World War. It has prefaces by Newton D. Baker and Daniel Willard and is divided into sections concerning the Council of

National Defense and its advisory commission, and the development of the American medical contribution to the war.

Both volumes are thoroughly indexed and they seem somehow to provide but a minimum amount of what might be called inside information concerning either Dr. Martin or the organizations that he has led. They do, however, reflect quite completely the rise and the accomplishments of Dr. Martin. In publishing this autobiography, Dr. Martin has rendered a distinct service to the organizations of which he has been so important a motivator. The book is well written and, except for those sections devoted to the routine recording of committee memberships and activities, a most interesting contribution.

Nouveau traité de médecine. Fascicule X: Pathologie de l'appareil circulatoire (cœur et vaisseaux). Tome III: Vaisseaux. Publié sous la direction de G. H. Roger, Fernand Vidal et P. J. Teissier. Secrétaire de la rédaction: M. Garnier. Boards. Price, 115 francs. Pp. 720, with 138 illustrations. Paris: Masson & Cie, 1933.

The third volume, dealing with disease of the blood vessels, is a complete work by itself. The introductory chapter on anatomy and physiology stresses the point that up to a few years ago the heart "occupied the position of monarch in the field of circulatory function and that the attitude of this organ was supposed to regulate nearly all actions and reactions of the entire circulatory system." In this way the misconception arose that one could evaluate circulatory function by merely examining the heart and more especially the myocardium. Due credit is given the English physiologists, particularly Starling and Barcroft, for correcting these views by pointing out important situations in which the state of the blood vessels and their contents directly govern the heart. The chapter on disease of the pulmonary artery and aorta is well written, and beautifully colored plates illustrate the pathologic changes described in the text. The clinical description of syphilitic aortitis bears the stamp of wide experience and close observation. Particularly valuable is the discussion on treatment of this condition. A complete and detailed presentation of arterial hypertension and hypotension follows. Arteritis and degenerative arterial conditions are next described. A concise but ample description of Buerger's disease follows, in which due credit is given to American observers. Chapters on venous pressure, phlebitis and varicose veins complete this volume. The book compares well with the two preceding volumes devoted to heart disease. The complete series is well worth reading and will be found to contain much valuable material presented in interesting style.

The Nature of Human Conflicts or Emotion, Conflict and Will: An Objective Study of Disorganization and Control of Human Behaviour. By A. R. Luria, Professor of Psychology at the Academy of Communist Education, Moscow. Translated from the Russian and edited by W. Horsley Gantt, Phillips Psychiatric Clinic, Johns Hopkins University. With a foreword by Adolf Meyer, Professor of Psychiatry, Johns Hopkins University. Cloth. Price, \$4. Pp. 431, with 133 illustrations. New York: Liveright, Inc., 1932.

In this book the author reports the results of his experimental studies and formulates his theoretical concepts. The theoretical conclusions are developed in close contact with the empirical material. However, the title and the subtitle of the book, "The Nature of Human Conflicts" or "Emotion, Conflict and Will," indicate something different from what the author offers as a result of his investigations. He employs one single experimental setting, which serves as a general indicator for the disturbances of human behavior. This setting is the old jungian word association experiment combined with a motor response to word stimuli. The experimental subject answers to a given word stimulus with the first word that comes to his mind and simultaneously presses with the fingers of the right hand on a pneumatic bulb connected with a drum while the left hand remains passive and holds also an analogous apparatus. The reaction time is measured, the curve of the motor response of the active right and passive left hand being registered on the drum.

With this experimental setting the author investigates various individuals in different psychologic situations, such as normal persons, the neurotic, the oligophrenic, children in emotional states and in different conflict situations, criminals before their trial, under accusation or after confession, and so on. In other experiments, "complexes" were artificially created by suggestion in hypnosis. The indicator for all the complicated mental processes was this simple experimental device of word associa-

tion and combined motor response. Unquestionably the author shows great ingenuity in creating controlled psychologic situations. All the observable changes, however, are restricted to differences in the three "lines" on the drum: the stimulus line, indicating the reaction time, the right hand curve and the left hand curve. All the conclusions of the author are based on the quantitative differences in the reaction time and on the changes of the time relations and the shape of the right hand curve and the involuntary motor manifestations of the left hand, which should be kept passive. One must admit that he subjects these experimental data to a thorough analysis and that his conclusions remain within the limits of logical thinking. Nevertheless these results necessarily can have but limited interest and cannot claim to contribute much to the understanding of the fundamental principles of the nature of human conflicts or human behavior. What the author finds can be expressed in a few sentences and one has the feeling that the length of the book is as little justified as its title.

With individuals under emotion, the motor response tends to be exaggerated and precipitate. Words associated with certain emotional "complexes" are followed usually by a prolongation of the reaction time, as Jung has already stated in his experimental studies. There are, however, undoubtedly some interesting observations. Inhibition in word association tends to increase and accelerate the motor discharge. The impulse to answer, if inhibited by certain emotional or other barriers, leads to a vicariously increased discharge on the more primitive motor level. In other words, inhibitions on the higher structures (speech) divert the impulse to the lower motor spheres. An inhibited impulse or a strong emotion often also expresses itself in the left hand curve. All these changes in speech and motor responses the author calls "disorganization of behavior." Other interesting observations are, for example, that neurotic persons (the hysterical and the neurasthenic) have less control of their motor innervations than have normal persons. Methodologically convincing are the experiments in hypnosis, in which a conflict is created artificially in the experimental subjects. In hypnosis the suggestion is given to a medical student that under the solicitation of a patient he agree to perform an illegal abortion. After awakening, the subject shows a disturbance in the word association as well as in the motor reaction to each stimulus word that is connected with the conflict situation. It is only natural that the practical application of this method is of greater value than the theoretical insight which it yields. As a result of a careful experimental study with criminals, the author convincingly shows that the disturbances of both word association and motor response regularly follow such critical word stimuli as are connected with the crime. The method seems to offer the possibility of a reliable method for circumstantial evidence.

The theoretical conclusions regarding the nature of "neurodynamic processes," as the author calls psychophysiological reactions, can be summed up in the following: "Every act of behavior in the young child has a direct character, and the excitation arising manifests a tendency, not to be restrained, but to proceed to its motor termination; and every reaction exhibits the ability to carry along in the active process an inadequately large mass of excitation."

In the course of development as an influence of culture the child develops a functional barrier, the rôle of which is to restrain the excitation from a direct transference to a motor sphere. "The mechanism of the functional barrier consists in the circuition of the reactive process by the higher psychological functions. . . . The functional barrier characterising the whole development of the reactions is a product of the cultural activity, a result of the ability to use the indirect operations not only in the control of the external mechanisms, but in the control of himself."

The disorganization of human behavior consists in the elimination of the functional barrier and regression to diffuse direct motor discharge. The restraining rôle of the functional barrier can be acutely destroyed in emotional states, under the influence of conflict, or chronically, in neuroses. Psychoneurosis is either based on a hypersensibility of the nervous system or on the defects of the functional barrier. "The basis of the neurosis is the inability to isolate the conflict from the motor sphere and destruction of the functional barrier." As is natural, the author makes no attempts to go into the psychologic structure of the

neurosis, since the experimental method that he employs does not permit an approach to psychologic content. It makes only certain formal dynamic interpretations possible.

At the end of the book, in connection with the question of the control of human behavior, the author discusses the problem of will. He rejects both the primitive materialistic concept of human behavior being entirely determined by the primitive instincts and the metaphysical, idealistic concept of a free will. He comes to the convincing formulation that voluntary behavior is the "ability to create stimuli and subordinate them; or, in other words, to bring into being stimuli of special order directed to the organization of behavior." The experimental proofs of this concept are not as convincing as the rest of his experiments, on account of an oversimplification of the problem. What these experiments show is that direct attempts to control behavior always lead to negative results. Its mastery is achieved only by indirect means. The author entirely disregards the effects of training on the mastery of behavior. More convincing are his experiments in which he demonstrates that in the control of human behavior speech is a "preeminent factor as an auto-regulator of behavior."

As a whole this work is an exceedingly instructive example of the limitations of the experimental approach to the problems of human personality. It has to be conceded, however, that the author makes use of the experimental method with great ingenuity and that his work means a definite progress on this field. This result contains little novelty; it expresses with a new terminology much that has been well known. It demonstrates again the inhibiting and controlling influence of the higher centers over automatic and unorganized motor processes. It shows that affect and conflict disturb this control and promote the more diffused and less organized motor expression. Furthermore, they confirm the well established fact that neurotic persons and children have certain similarities in the organization of their behavior in regard to the lesser influence of their higher centers.

British Spas and Seaside Resorts: An Appreciation of Their Medical Values and Uses in the Prevention and Cure of Disease. Edited by R. Fortescue Fox, M.D., F.R.C.P., F.R.Met.S. From data supplied by the medical officers of health, the local authorities and many individuals in the various resorts. Official Handbook of the British Health Resorts Association, 1933. Paper. Price, 1s. Pp. 196, with illustrations. London: J. & A. Churchill, 1933.

This handbook, published at a reasonable price, is a complete guide to the equipment, location and special qualifications of various British spas and seaside resorts. The number is considerable. The volume contains also a large number of advertisements of such resorts, indicating prices and other information of value to those who plan a visit to any of these resting places.

The Medicinal and Poisonous Plants of Southern Africa: Being an Account of Their Medicinal Uses, Chemical Composition, Pharmacological Effects and Toxicology in Man and Animal. By John Mitchell Watt, M.B., Ch.B., Professor of Pharmacology in the University of the Witwatersrand, Johannesburg, and Marla Gerdlina Breyer-Brandwijk, Phil. doct^a, Apotheker, Research Worker in Phyto-Chemistry in the Department of Pharmacology in the University of the Witwatersrand. Cloth. Temporary price, \$6.25. Pp. 314, with 26 illustrations. Baltimore: William Wood & Company, 1933.

The authors are well qualified to write on the subject. The book is valuable and interesting from both cultural and scientific points of view. While no plant is included that has been used only as a charm, the book has the atmospheres of magic, the bush and the scientific laboratory interestingly blended. The subject matter is arranged according to the botanic genera, 128 of which are discussed and over 2,500 specimens included. There are twelve illustrations in color and twenty in black and white, all neatly executed. The indexes have been prepared with great care, both English and African names being given, so that information may be traced through the botanic name. There are numerous references to literature from worldwide sources, many from American authors. The index of botanic names requires fifteen pages, of English and African names nineteen, and of native names thirty-seven. The book should interest the cultural anthropologist and is invaluable to the pharmacologist and the toxicologist. An enormous amount of work has been required for its production. It is well done and presented with a style and finesse highly creditable to science in South Africa. It is a distinct contribution to pharmacology and toxicology.

Miscellany

RULES AND REGULATIONS GOVERNING MEDICAL CARE PROVIDED IN THE HOME TO RECIPIENTS OF UNEMPLOYMENT RELIEF

The Federal Emergency Relief Administration, Washington, D. C., makes available the following statement as a guide to its personnel and to the public:

The following regulations, governing the provision in the home of medical care (includes "medicine, medical supplies and/or medical attendance") to persons eligible for unemployment relief, are hereby established.

1. *Policy*.—A uniform policy with regard to the provision of medical, nursing, and dental care for indigent persons in their homes shall be made the basis of an agreement between the relief administration and the organized medical, nursing, and dental professions, state and/or local. The essence of such a policy should be:

(a) An agreement by the relief administration to recognize within legal and economic limitations the traditional family and family-physician relationship in the authorization of medical care for indigent persons in their homes; the traditional physician-nurse relationship in the authorization of bedside nursing care; the traditional dentist-patient relationship in the authorization of emergency dental care; and

(b) An agreement by the physician, nurse (or nursing organization) and dentist to furnish the same type of service to an indigent person as would be rendered to a private patient, but that such authorized service shall be a minimum consistent with good professional judgment and shall be charged for at an agreed rate which makes due allowance for the conservation of relief funds.

The common aim should be the provision of good medical service at a low cost—to the mutual benefit of indigent patient, physician, nurse, dentist and taxpayer.

The policy adopted shall be to augment and render more adequate facilities already existing in the community for the provision of medical care by the medical, nursing and dental professions to indigent persons. It shall imply continuance in the use of hospitals, clinics and medical, dental and nursing services already established in the community and paid for, in whole or in part, from local and/or state funds in accordance with local statutes or charter provisions. Federal emergency relief funds shall not be used in lieu of local and/or state funds to pay for these established services.

The phrase "in their homes" shall be interpreted to include office service for ambulatory patients, with the understanding that such office service shall not supplant the services of clinics already provided in the community.

2. *Procedure*.—A uniform procedure for authorization of medical, nursing, and dental care in the home shall be established by each state and/or local emergency relief administration. This procedure shall not be in conflict with the following requirements:

(a) *Written Order*.—All authorizations for medical, nursing and dental care shall be issued in writing by the local relief officer, on the regular relief order blank, prior to giving such care; except that telephone authorization shall immediately be followed by such a written order; and provided that authorizations for bedside nursing care shall be based on a recommendation by the attending physician, in cases where a physician is in attendance, who shall certify to the need for nursing service as part of the medical care. Authorizations for medicine and medical supplies shall also be issued in writing and, in general, such authorizations shall not be issued except on written request of the physician authorized to attend the person for whose use they are desired.

(b) *Acute Illness*.—Authorizations for medical care for acute illness shall be limited to a definite period and a maximum expenditure or number of visits (i. e., not more than two weeks or ten visits), according to the standard agreement made between relief officials and physicians under regulation 1. Medi-

cal care in excess of this period shall not be authorized until after a reinvestigation of the case in the home by the local emergency relief administration.

(c) *Chronic Illness*.—Medical care for prolonged illnesses, such as chronic asthma, chronic heart disease, chronic rheumatism, diabetes, etc., shall be authorized on an individual basis, and, in general, visits shall be limited in frequency (i. e., not more than one visit per week for a period not exceeding two or three months) by agreement. Nursing care for such chronic illnesses shall, in general, be authorized in accordance with the need for such care as indicated by the attending physician. If necessary, more frequent visits, by the physician or nurse, for an acute attack occurring in the course of a chronic illness, may be authorized. Care for chronic illness authorized under this section shall supplement and not supersede existing community services, such as visiting nursing service or institutional care.

(d) *Obstetric Care*.—Authorization for obstetric service in the home shall include an agreed minimum number of prenatal visits (where possible), delivery in the home, and necessary postnatal care. Due caution shall be exercised that this authorization for delivery in the home does not involve undue risk to the patient for whom hospital care may be imperative. The physician authorized to attend the confinement in the home shall be responsible for certifying to the local relief administration that, in his professional judgment, delivery in the home will be safe.

(e) *Special Services*.—Medical and nursing services not covered above shall be authorized on an individual basis, subject to the general provisions of the agreement made under regulation 1. Special dental service shall be subject to a similar procedure.

Medical care shall not ordinarily be authorized by relief administrations for conditions that do not cause acute suffering, interfere with earning capacity, endanger life, or threaten some permanent new handicap that is preventable when medical care is sought.

(f) *Accessory Services*.—Emergency dental care and bedside nursing service, for indigent persons in their homes, may be authorized subject to the existing general policy of the state and/or local relief administration.

(1) Dental care shall, in general, be restricted to emergency extractions and repairs. Dentists and dental care shall be subject to the same general restrictions indicated for physicians under regulation 1.

(2) Bedside nursing care, where authorized, shall conform to a procedure comparable to the one outlined for physicians above, and shall be provided under an agreement made between relief administrations and nursing organizations, state and/or local, under the same principles suggested for physicians under regulation 1. Standards of accredited local nursing organizations shall be followed by nurses giving authorized bedside nursing care to indigent persons in their homes. Such authorized bedside nursing care shall not supersede or supplant existing local official services giving such care under the provisions of local law.

(g) *Fee Schedule*.—The agreement between the state and/or local relief administration and the organized professional groups of physicians, nurses and dentists, state and/or local, established under regulation 1, shall include a fee schedule covering the basic and special services outlined in sections (b) to (f), inclusive, of this regulation. In the interests of simplified accounting it is suggested: That a flat rate be established, on a per visit basis for the usual care given to acute and chronic illness (sections (b) and (c) above), for attendance at confinement (section (d) above), for emergency extractions (section (f) above), and for a bedside nursing visit (section (f) above); and that all special services (medical, nursing or dental) be covered by an agreed reduction from the usual minimum fee schedule for such services with an agreed maximum fee. A recognized differential in fee shall be established between a home and an office visit. All fees shall be established on the basis of an appreciable reduction from the prevailing minimum charges for similar services in the state and local communities, with due recognition of the certainty, simplicity and promptness of payment that authorization from the local relief administration insures. This schedule shall only apply where the exper-

diture of federal relief funds is involved and shall not preclude the payment of additional amounts from local funds.

Where bedside nursing care is authorized, the flat rate per visit shall be established by agreement at not to exceed the certified cost per visit established for accredited visiting nursing organizations in the state or local district.

(h) *Bills*.—Physicians, nurses (or nursing organizations) and dentists who are providing authorized medical care to indigent persons in their homes shall submit to the local relief official, monthly (within ten days after the last day of the calendar month in which such medical care was provided), an itemized bill for each patient. Each bill shall be chronologically arranged and shall contain at least enough information to permit proper audit (i. e., name, age and address of patient; general nature of illness or diagnosis; whether home or office treatment; dates of service; and status of case at end of month—cured, sent to hospital, dead, needs further care, etc.). Bills for medical care shall be accompanied by the original written order for such care, except for cases in which medical service under an authorization has not terminated during the calendar month covered by the bill, in which cases the bill shall show, in addition to the details required above, the date and serial number of the outstanding order. Retroactive authorizations shall not be issued or honored for payment.

Bills for special and accessory services, outlined under sections (c) and (f) above, shall give full details of such services, and bills for medicines and medical supplies, under (i) below, shall be subject to the same general requirements. Bills for drugs shall list the name and quantity of each. The formula and number of each prescription costing more than 25 cents shall be submitted with or made a part of the pharmacist's bill.

NOTE.—The submission of bills and their audit and authorization for payment will be simplified if the state emergency relief administration provides a suitable bill form.

(i) *Medicine and Medical Supplies*.—Physicians providing authorized medical care to indigent persons shall use a formulary which excludes expensive drugs where less expensive drugs can be used with the same therapeutic effect. When expensive medication is considered essential by the authorized attending physician, it may be authorized after consultation with the local medical advisory committee.

Prescriptions for necessary drugs and medicine shall be restricted to the National Formulary or the United States Pharmacopeia. To avoid excessive expenditures for remedies of unknown or doubtful value, proprietary or patent medicines shall not be authorized.

State and/or local relief officials are urged to make trade agreements with pharmaceutical organizations and druggists for uniform or reduced rates for prescriptions.

Authorizations for medical supplies shall be restricted to the simplest emergency needs of the patient consistent with good medical care.

In general, authorizations for medicine and medical supplies shall not be issued except on written request of the physician authorized to attend the person for whose use they are desired.

3. *Authority*.—The state emergency relief administration, responsible for the distribution of federal and state emergency relief funds to local relief administrations, shall give approval to such statements of policy, proposed fee schedules, and detailed procedures, governing the provision of medical, nursing and dental care in the home to recipients of unemployment relief, as may be established by state and/or local relief administrations, in accordance with the provisions of regulations 1 and 2, above, before such policies, schedules and procedures shall take effect. It shall be the responsibility of the state emergency relief administration to formulate a program of medical, nursing and dental care for indigent persons in their homes, which shall not be in conflict with the provisions of regulations 1 and 2, above, and to make sure, by giving or withholding approval, that analogous programs formulated by local relief administrations shall not be in conflict with such state program.

(a) *State and Local Professional Advisory Committees*.—State and local relief administrations shall request the presidents of the state and local medical, nursing, dental and pharmaceutical organizations, respectively, to designate an existing committee or appoint a special committee, to advise them in the formulation and adoption of adequate programs for medical,

nursing and dental care in the home for indigent persons. The relief administrations shall be responsible for the final adoption of such programs. The medical, nursing, dental and pharmaceutical advisory committees can assist these administrations in maintaining proper professional standards and in enlisting the cooperation of the constituent, professional membership in such programs. Local medical, nursing and dental programs submitted to the state relief administration for approval should be submitted to the appropriate professional advisory committee for comment, before final approval is given. The appropriate professional advisory committees should be consulted by relief administrations with regard to disputed problems of medical, nursing and dental policy and practice.

(b) *Licensed Practitioners of Medicine and Related Professions*.—When a program of medical care in the home for indigent persons has been officially adopted, participation shall be open to all physicians licensed to practice medicine in the state, subject to local statutory limitations and the general policy outlined in regulation 1, above. Physicians authorized by relief officials to give medical care under this program shall have accepted, or shall be willing to accept, the regulations and restrictions inherent in such a program. In order to provide adequate medical care it may be desirable for local relief officials to maintain on a district basis a list or file of physicians in the community who have agreed in writing to comply with the officially adopted program. Such a list of physicians should also facilitate a more equitable distribution of orders for medical services.

A similar policy and procedure shall be followed in the preparation of approved lists of nurses, dentists and pharmacists. Licensure and/or registration to practice their respective professions in the state shall be a prerequisite to approval of graduate nurses, dentists and pharmacists for authorized participation in the officially approved state program for the provision of medical care for indigent persons in their homes.

(c) *State Program for Medical Care to Indigent Persons in Their Homes*.—When the state emergency relief administration has adopted a uniform program for medical, nursing and dental care for indigent persons in their homes, in accordance with these rules, a copy of such program, including the statement of policy, fee schedules and detailed procedures, shall be filed immediately with the Federal Emergency Relief Administration.

Medicolegal

Sponge Left in Appendectomy Wound Evacuated Through Rectum.—The defendant physician did an appendix operation on the plaintiff. Three months and ten days later he removed from the plaintiff's rectum a piece of gauze resembling a surgical "sponge." The plaintiff, charging that this gauze was a surgical sponge negligently left in his abdomen during the operation, sued the defendant. The jury returned a verdict for the plaintiff, but the court directed that, notwithstanding the verdict, judgment be entered in favor of the defendant. From the judgment so entered, the plaintiff appealed to the Supreme Court of Wyoming.

The plaintiff testified that soon after he was operated on he had severe abdominal pains. After ten days in the hospital he returned to his home. During the next six weeks, he consulted the defendant a number of times and was given medicine, without relief. Until the gauze was removed, according to the plaintiff's testimony, he had no normal bowel movement. Gripping pains would generally set in when he ate, and he became afraid to eat at all. He sought relief at the Mayo Clinic and later he was in the Veterans' Hospital at Sheridan, Montana. Then he went to California in search of relief. Later he was sent to a hospital at Fort Lyon, Colorado, where it was found that he was suffering from tuberculosis. He claimed that because of the defendant's negligence he had suffered intense pain and contracted tuberculosis.

On behalf of the defendant, three nurses who had attended the operation testified that the sponges were checked and rechecked, and none was missing. A physician who assisted at the operation testified that no sponge was left in the plaintiff's body. The defendant testified to the same effect; he not

only asked the nurses to count the sponges and was told that the count was correct, but he carefully inspected the field of operation and saw that no sponge remained in the abdomen. The testimony showed, too, that a hemostat was attached to each large sponge, making its loss impossible.

The plaintiff testified that the gauze removed from his rectum was about 5 inches wide and 34 inches long and was rolled up about the diameter of a broomstick. Another witness testified that it seemed to be about 18 inches wide and 30 inches long and was medicated gauze. A third witness did not know the length or width of the material removed but said that it could have been a pocket handkerchief. A fourth witness testified that the gauze was between 3 or 4 feet long and 5 or 10 inches wide. The defendant physician testified that the gauze which he removed from the plaintiff was "a strip of cloth, 2 or 2½ inches wide and 12 to 16 inches long; that it was cotton material and of a very fine mesh, closely woven, and not the same kind of gauze used in the hospital at the time of the operation." The head nurse testified that no sponge of the size stated by the plaintiff, 5 inches wide by 34 inches long, were used at the hospital and that the large sponges measured 9 inches wide by 32 inches long.

The theory of the defendant physician was that the plaintiff himself, suffering from an alcoholic psychosis, inserted the gauze into his own rectum. In support of this theory evidence was introduced concerning the practices of persons suffering from such psychoses and concerning the patient's mental condition. It was shown, however, that the testimony concerning the patient's mental condition related to a time subsequent to the removal of the gauze. The plaintiff testified that he did not "drink" at all between the time of the operation and the time of the removal of the gauze. Evidence was offered to show that it was unlikely that he swallowed the gauze.

A physician testifying for the defendant did not believe that a piece of gauze of the size stated by the plaintiff would in three months and ten days ulcerate into the lumen of the intestinal tube; it would have caused peritonitis, serious illness, and possibly death. Another physician believed that such a sponge would have caused local peritonitis; if it had ulcerated into the intestine it could in part have gained entrance into the intestinal tract, but it could not have traveled through the large intestine and issued out of the rectum. A physician testifying for the plaintiff was of the opinion that the sponge removed from the plaintiff's rectum was left in the plaintiff's body at the time of the appendix operation. If a sponge is left in the abdomen, he testified, it is kept in constant motion by the peristaltic movements of the intestines. The consequent pressure and irritation produce necrosis of the intestinal wall, and in the course of time the sponge ulcerates through it. While this process is going on, adhesions wall the foreign substance off from the abdominal cavity. They put it into a pocket, and the contents of the bowel escape into this pocket, not into the abdominal cavity. The sponge, moving and working its way into the large intestine, is gradually moved along through the rectum with the bowel contents.

A physician performing an operation, said the Supreme Court, cannot ordinarily be held responsible for the negligence of some one else. It is his duty, however, to exercise reasonable care in seeing that no foreign substances which ought to be removed are left in the body. Ordinarily, at least, a physician should not be able to purge himself of liability for injury to a patient caused by sponges or pads, by showing that he relied exclusively on a custom or rule requiring a nurse to count the sponges. Quoting from *Roark v. Peters*, 2 La. App. 448, the court said:

The decisions hold that the physician must not rely conclusively upon the count and checking of the sponges by the nurses. He must personally use his own skill and exercise his own faculties in accounting for them. The question whether due and reasonable care and prudence have been exercised by the physician or surgeon is one to be found by the jury or the court and each case must be determined according to the facts and circumstances surrounding it.

The evidence in the present case, the court said, was sufficient to enable the jury to determine whether the defendant did or did not use ordinary care. The jury was not bound to accept the testimony of the defendant and those who assisted him.

The court distinguished this case from one in which an emergency arises and it becomes necessary to close a wound

hurriedly in order to protect the patient's life. In *Waldon v. Archer*, 20 Ont. W. R. 77,

All present thought that all the sponges had been removed. All, including the defendant, had their minds fixed on completing the operation as speedily as possible lest the patient should die on their hands. The question to be decided was whether the sewing up of the sponge in the wound, which prima facie might be regarded as negligence, could properly be found to be so in this case. The learned Judge was of opinion and found that, having regard to the facts disclosed in evidence, proper skill and attention were used by the defendant, and the result was the saving of the life of the patient. The failure to remove the sponge could not be regarded as actionable negligence or as more than an accidental, excusable, and condonable slip, or inadvertence, resulting from the critical condition of the patient and the paramount duty of completing the operation in the shortest possible time.

But the Supreme Court of Wyoming could find in the evidence concerning the operation in the present case no need for any such haste.

It was unnecessary, the court thought, to determine whether the plaintiff's tuberculosis and the pains and difficulties connected with it were the result of the presence of the sponge in his abdominal cavity and intestinal tract, as one physician testified. There was ample testimony to show that a sponge in the abdomen would of itself cause trouble, pain, and sickness.

That a sponge of the size described should work its way through the intestine in the manner claimed, the Supreme Court regarded as "truly wondrous." The court pointed out, however, that similar situations had been presented in *Spears v. McKinnon*, 168 Ark. 357, 270 S. W. 524; *Moore v. Ivey* (Texas Civ. App.) 264 S. W. 283; *Akridge v. Noble*, 114 Ga. 949, 41 S. E. 78, and in *Ruth v. Johnson* (C. C. A.) 172 F. 191.

And because the evidence was sufficient to raise a question for determination by the jury, the Supreme Court reversed the judgment of the trial court by which the jury's verdict for the plaintiff was ignored and judgment entered in favor of the defendant. The Supreme Court directed the trial court either to enter judgment in favor of the plaintiff on the verdict already rendered or else to grant a new trial.—*Jackson v. Hansard* (Wyo.), 17 P. (2d) 659.

Society Proceedings

COMING MEETINGS

- American College of Surgeons, Chicago, October 9-13. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
- American Public Health Association, Indianapolis, October 9-12. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.
- American Roentgen Ray Society, Chicago, September 25-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.
- Associated Anesthetists of the United States and Canada, Chicago, October 8-12. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.
- Association of American Medical Colleges, Minneapolis, Oct. 30-Nov. 1. Dr. Fred C. Zappfe, 5 South Wabash Avenue, Chicago, Secretary.
- Association of Military Surgeons of the United States, Chicago, September 25-27. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.
- Central Society for Clinical Research, Chicago, Nov. 3. Dr. Lawrence D. Thompson, 903 University Club Building, St. Louis, Secretary.
- Delaware Medical Society of Wilmington, September 26-27. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.
- Indiana State Medical Association, French Lick, September 25-27. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 16-20. Dr. W. B. Peck, 12½ East Stephenson Street, Freeport, Ill., Managing Director.
- Kansas City Southwest Clinical Society, Kansas City, Mo., October 3-5. Dr. Lewis G. Allen, 601 Minnesota Avenue, Kansas City, Kan., Secretary.
- Mississippi Valley Conference on Tuberculosis, Kansas City, Mo., October 6. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.
- Nevada State Medical Association, Las Vegas, September 29-30. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.
- New England Surgical Society, Boston, September 29-30. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.
- Oregon State Medical Society, Portland, Oct. 26-28. Dr. Albert W. Holman, 364 Washington Street, Portland, Secretary.
- Pennsylvania Medical Society of the State of, Philadelphia, October 2-5. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.
- Southern Medical Association, Richmond, Va., November 14-17. Mr. C. P. Loran, Empire Building, Birmingham, Ala., Secretary.
- Southern Minnesota Medical Association, New Ulm, September 25. Dr. M. C. Piper, Mayo Clinic, Rochester, Secretary.
- Vermont State Medical Society, Barre, October 5-6. Dr. W. G. Ricker, 31 Main Street, St. Johnsbury, Secretary.
- Virginia Medical Society of, Lynchburg, Oct. 24-26. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

2: 413-448 (May) 1933

Contributions of Medicine to Civilization. S. Kirkpatrick, Selma.—p. 413.

Jerome Cochran Lecture: Cancer of Stomach and Colon. J. S. Horsley, Richmond, Va.—p. 419.

Differential Diagnosis of Abdominal Tumors. F. K. Boland, Atlanta, Ga.—p. 427.

Yeast Infections: Part II. Coccidioidal Granuloma. G. Walsh, Fairfield.—p. 434.

American Journal of Diseases of Children, Chicago

45: 933-1160 (May) 1933

Relationship of Rheumatic Process to Development of Alterations in Tissues. A. F. Curn, New York.—p. 933.

*Meninges in Intracranial Hemorrhage of the New-Born. A. Levinson and O. Saphir, Chicago.—p. 973.

Effect on Peptic Digestion in Vitro of Artificial Feeding as Used for American Infants: Amalia Lautz, Fredericksburg, Va.—p. 985.

Vitamin A Content of Milk Irradiated by Various Carbon Arcs. R. C. Bender and G. C. Supplee, Bainbridge, N. Y.—p. 995.

*Blood Grouping. S. J. Seeger and A. A. Schaefer, Milwaukee.—p. 999.

Interplay of Placental Factors at Birth, with Consideration of Their Physiologic and Clinical Significance. J. Krafka, Jr., Augusta, Ga.—p. 1007.

*Schilling Blood Count in Pneumonias of Infancy and of Childhood. J. L. Rogatz, New York.—p. 1022.

Loss of Minerals Through Skin of Infants. W. W. Swanson and L. V. Job, Chicago.—p. 1036.

Meninges in Intracranial Hemorrhage of the New-Born.—Levinson and Saphir studied the reaction of the meninges and the brain in cerebral hemorrhage of the new-born and the relation of atelectasis to intracranial hemorrhage, paying special attention to the occurrence of cerebral hemorrhage in three infants delivered by cesarean section. They observed a lack of cellular reaction in the meninges in the forty-five cases of intracranial hemorrhage. They believe that the small number of clinically evidenced complications of intracranial hemorrhage in children who survive can be explained by the absorption of the hematoma without organization and without the formation of a fibrous scar. The three instances of intracranial hemorrhage that occurred in premature infants delivered by cesarean section indicated that trauma was not the principal cause of intracranial hemorrhage. In these infants, maternal toxemia seemed a possible contributory cause of the hemorrhage. There was no relationship between intracranial hemorrhage and atelectasis in the series.

Schilling Blood Count in Pneumonias.—Rogatz made repeated examinations by the Schilling method of the leukocytic changes in the blood of fifty-one infants and children acutely ill with bronchial and lobar pneumonia. Most of the cases were confirmed by roentgen examination, and the differential smears were made daily, at the same hour in the morning. An initial total leukocyte count was made in all cases and repeated daily in the earlier cases. All patients showed the usual hyperleukocytosis at the height of infection. The total number of counts made was 502. The staff cells showed marked evidence of degeneration, being small and poorly developed, with deep-staining, pyknotic nuclei, excessive, irregular, coarse granulations in the cytoplasm and frequent vacuolization. In addition to the predominance of staff cells, there was lymphopenia. There were fewer mature, segmented cells than are normally present, and no eosinophils. The blood platelets, which are ordinarily scattered throughout the smear and visible in almost every field, were seen occasionally. As the infection proceeded, the shift to the left was further increased by additional staff forms and the appearance of healthy, juvenile cells not yet acted on by peripheral toxins in the blood stream.

Preceding the fall in temperature or the appearance of other signs of clinical improvement by from twelve to twenty-four hours or more, the juvenile and the staff cells decreased rapidly and often suddenly. A corresponding increase in the number of segmented cells and lymphocytes occurred. With resolution one noted a much healthier appearance of the mature forms. The reappearance of eosinophils was also a favorable sign confirming recovery. A variable monocytosis accompanied convalescence. The blood reached normal between two and twelve days after the fall in temperature, usually after about ten days. From these and other studies the author concludes that the Schilling blood count is of greater value than the ordinary smear in revealing changes in the patient's condition, that it reflects these changes more accurately and somewhat in advance of their clinical appearance, and that it should therefore replace the usual differential examination of the blood in routine practice.

American Journal of Hygiene, Baltimore

17: 517-774 (May) 1933

Epidemiologic and Bacteriologic Study of "Common Cold" in Isolated Arctic Community (Spitsbergen). J. H. Paul and H. L. Freese, Baltimore.—p. 517.

Minor Respiratory Diseases in Selected Adult Group: Prevalence, 1928-1932, and Clinical Characteristics as Observed in 1929-1930. J. A. Doull, N. B. Herman and W. M. Gafafer, Baltimore.—p. 536.

Epidemic Influenza: Comparison of Clinical Observations in Major and Minor Epidemic. J. A. Doull and Anne M. Bahlke, Baltimore.—p. 562.

Neutralization of Poliomyelitis Virus by Serum of Liberian Negroes. N. P. Hudson and E. H. Lennette, Chicago.—p. 581.

Studies on Epidemiology of Poliomyelitis: I. Methods and Criteria for Detection of Abortive Poliomyelitis. J. R. Paul, R. Salinger and J. D. Trask, New Haven, Conn.—p. 587.

Id.: II. Incidence of Abortive Types of Poliomyelitis. J. R. Paul, R. Salinger and J. D. Trask, New Haven, Conn.—p. 601.

Monthly Estimates of Child Population "Susceptible" to Measles, 1900-1931, Baltimore, Md. A. W. Hedrich, Baltimore.—p. 613.

Studies of Endamoeba Histolytica and Other Intestinal Protozoa in Tennessee: V. Comparison of Five Strains of Endamoeba Histolytica, with Especial Reference to Their Pathogenicity for Kittens. H. E. Meleney and W. W. Frye, Nashville, Tenn.—p. 637.

Epidemic of Malaria at Falmouth, Jamaica, British West Indies. B. E. Washburn, Jamaica, British West Indies.—p. 656.

Studies on Benign Tertian Malaria: II. Clinical Characteristics of the Disease in Relation to Dosage of Sporozoites. M. F. Boyd and W. K. Stratman-Thomas, Tallahassee, Fla.—p. 666.

Climatic Basis for Susceptibility to Heat Stroke or Exhaustion. C. A. Mills and Cordelia Ogle, Cincinnati.—p. 686.

Effects of Low Temperatures on Encysted Trichinella Spiralis. D. L. Augustine, Boston.—p. 697.

Typhoid Carriers in New York State, with Especial Reference to Gall-bladder Operations. H. F. Senftner and F. E. Coughlin, Albany, N. Y.—p. 711.

Effect of "Winter Rotation" of Water on Snails Involved in Spread of Schistosomiasis in Egypt, 1930-1931 and 1931-1932. C. H. Barlow, Cairo, Egypt.—p. 724.

Relationship of Abnormalities of Upper Respiratory Tract to Minor Respiratory Diseases. J. A. Doull, V. A. Van Volkenburgh, N. B. Herman and W. M. Gafafer, Baltimore.—p. 743.

Streptococcus Haemolyticus (Beta) in Presence and Absence of Acute Minor Respiratory Infection, 1928-1931. Janet M. Bourn, Harriet M. Carpenter and Emily McComb, Baltimore.—p. 761.

American J. Obstetrics and Gynecology, St. Louis

25: 623-778 (May) 1933

Volumetric Determination of Amniotic Fluid with Congo Red: Preliminary Report. W. J. Dieckmann and M. E. Davis, Chicago.—p. 623.

Hyperthyroidism Associated with Pregnancy. F. A. Bothe, Philadelphia.—p. 628.

*Concerning Death of Fetus in Pregnancy. J. S. Lawrance, Philadelphia.—p. 633.

Experimental Study of Effects of Intravenous Injections of Hypertonic Glucose Solution (50 Per Cent) on Circulation of Cat. V. P. Mazzola and M. A. Torrey, Brooklyn.—p. 643.

Conization of Uterine Cervix. M. N. Hyams, New York.—p. 653.

Mechanism and Management of Third Stage of Labor. M. L. Brandt, New York.—p. 662.

*Injury of Urinary Bladder Following Irradiation of Uterus. A. L. Dean, Jr., New York.—p. 667.

Pelvic Sympathectomy for Pain in Carcinoma of Cervix. C. A. Dehner, Philadelphia.—p. 687.

Psychogenic Factors in Functional Female Disorders. Karen Horner, Chicago.—p. 694.

Irregularity of Menstrual Function. E. Allen, Chicago.—p. 705.

*Diabetes and Pregnancy. J. Ronsheim, Brooklyn.—p. 710.

Primary Carcinoma of Bartholin's Gland. W. B. Harer, Philadelphia.—p. 714.

*Döderlein's Bacillus in Treatment of Vaginitis. R. W. Mohler and C. P. Brown, Philadelphia.—p. 718.

Aschheim-Zondek Pregnancy Test, Friedman Modification: Report of One Hundred and Seventy-Four Cases. B. Mann, D. L. Golub, Philadelphia.—p. 723.

- Injuries to Vagina Resulting from Elliott Treatment. S. A. Cosgrove and E. G. Waters, Jersey City, N. J.—p. 729.
- Tubal Pregnancy Following Uterine Insemination. R. A. Lifvendahl, Chicago.—p. 733.
- Teratoma of Uterus: Report of Case. J. E. Lackner and L. Krohn, Chicago.—p. 735.
- Gummas of Urinary Bladder. W. E. Levy and C. J. Tripoli, New Orleans.—p. 743.
- Myomectomy for Interstitial Fibroid Complicated by Very Early Pregnancy: Report of Case. H. N. Vineberg, New York.—p. 746.
- Complete Placental Detachment with Apoplexy of Uterus Requiring Hysterectomy. M. L. Leventhal, Chicago.—p. 748.
- A Stem Pessary Embedded for Fifteen Years in the Uterus: Report of Case. F. L. Adair, Chicago.—p. 750.
- Viability of Fragments of Menstrual Endometrium. S. H. Geist, New York.—p. 751.
- Placenta Praevia with Twin Pregnancy. J. S. Raudenbush, Philadelphia.—p. 752.
- Gauze Pad Removed from Abdomen. C. Culbertson, Chicago.—p. 752.
- Abdominal Pregnancy Complicated by Eclampsia. E. Allen, Chicago.—p. 753.
- Speculum for Use in Cervical Cauterization. E. F. McLaughlin, Philadelphia.—p. 755.
- Aspergillus Fumigatus Vaginitis. M. T. Goldstine, Chicago.—p. 756.

Death of Fetus from Starvation.—Lawrance believes that there is a type of intra-uterine death of the fetus in pregnancy that is due to fetal starvation alone, not to syphilis, nephritis, lead, anemia or cardiac disease. The starvation is due to the increasing difficulty that the increasing amounts of nutriment required to nourish the infant meet in filtering through placentas of a definite type. Placentas of this type are characterized by an increase in connective tissue and a coarsening of the maternal and fetal elements. Carbohydrates can filter through such a placenta if given in sufficient amounts and in proper form. The administration of sufficient quantities of carbohydrates in the most diffusible form will temporarily relieve the distress, while an excessive but not exclusive carbohydrate diet will prevent the recurrence of distress. Observation of the rate and rhythm of the fetal heart and attention to the reports of instructed mothers regarding the periodicity and quality of fetal movements will often indicate the advent of fetal distress in time to prevent intra-uterine death.

Injury of Urinary Bladder.—Dean examined and treated forty-seven women for injuries of the bladder after irradiation of the uterus with both radium and roentgen rays. The primary uterine diseases comprised a number of conditions, both benign and malignant. The radiation therapy varied within wide limits. Irradiation of the uterus preceded the onset of bladder symptoms in the average case by two and a half years. The onset was sudden and often suffering was intense. Bladder symptoms consisted of frequency, dysuria and hematuria. In some cases there was extensive destruction of tissue and even death. Cystoscopic examination showed ulceration, anemic areas surrounded by intense inflammation, or punctate hemorrhage. The lesion was situated in the posterior third of the base of the bladder in or near the midline. Diagnosis was based on the history, vaginal examination, the cystoscopic aspect and a biopsy. Treatment consisted of tincture of hyoscyamus and codeine for pain, dilute phosphoric acid orally and for lavage of the bladder, and instillations of mild silver protein and mercurochrome.

Diabetes and Pregnancy.—Since 1920 Ronsheim has encountered thirty-six cases of pregnancy complicated by diabetes. From a study of these cases in conjunction with a review of the literature he draws the following conclusions: 1. Latent diabetes is a greater menace to the fetus than frank diabetes. 2. With proper treatment and cooperation on the part of the patient, fetal mortality should be considerably reduced. 3. Uncontrolled diabetes will almost invariably result in a miscarriage, a premature birth of a live child which may or may not survive, or the death of the fetus in utero a few weeks before term. 4. Since the dangers to the unborn child are so great, cesarean section about three weeks before term must be seriously considered, particularly in the primiparous woman or when previous pregnancies did not result in live births. 5. General anesthesia with ether or chloroform is to be avoided because of the danger of precipitating coma. The possibility of sloughing of the tissues from infiltration anesthesia must be borne in mind. 6. Repeated blood sugar determinations must be a part of routine prenatal care, since glycosuria may appear too late to prevent damage to the pregnancy. 7. In cases of recurrent miscarriages or stillbirths

without a determinable cause, the sugar tolerance test may indicate that the patient is potentially diabetic. 8. Determination of the sugar content of the amniotic fluid and of the fetal urine will help in establishing the diagnosis in some cases.

Döderlein's Bacillus in Treatment of Vaginitis.—Mohler and Brown present a preliminary report on the treatment of vaginitis with pure viable cultures of *Bacillus döderleini*. The *Döderlein* culture used was grown in a whey medium and after suitable growth it was prepared by mixing a half ounce of the culture with enough lactose to make a thin paste. After the vagina has been cleansed with dry cotton, the mixture is planted and a small cotton tampon is placed in the entrance of the vagina. The treatment is carried out once every twenty-four hours by the physician or the patient. If by the patient, she does it preferably before retiring. After a cleansing douche of plain water she injects the mixture into the vagina with a soft rubber ear syringe, assuming a reclining position with the hips slightly elevated, and introduces a small tampon of cotton, which she removes the following morning. The patient should report at weekly intervals for check-up and study. Routine smears of the vaginal canal are made on each visit; when the secretion appears normal and when large numbers of *Bacillus döderleini* are seen in the smears after staining, cultures are taken to determine if the planted organisms can be recovered. The authors treated twenty-one patients, six of whom failed to carry out treatment as recommended but were improved so far as the symptom of leukorrhea was concerned while following the treatment. Nine patients are still under observation; the hyperemia and mottling of the vaginal canal have disappeared and the vestibule of the vagina looks normally pink except in a few patients who show a small area of hyperemia about the orifices of the tubules of Skene. The number of pus cells in the secretion from these areas is interpreted as implying that there is present a focus of infection which has not been destroyed. In some the mottling has persisted about a discrete area on the portio. These nine patients have remained symptom free with irregular treatment, but they have not as yet responded to the criteria of cure. Six patients have remained symptom free, and the authors have recovered from their vaginal secretion cultures of the organisms planted. Proof of cure was based on absence of symptoms, inability to find pus cells in large numbers in stained smears, failure of the vaginitis to return after treatment has been discontinued and, finally, recovery of cultures of the implanted organisms from the vagina of the patient treated.

American Journal of Pathology, Boston

9: 275-392 (May) 1933

- Incisor Teeth of Albino Rats and Guinea-Pigs in Vitamin A Deficiency and Repair. S. B. Wolbach and P. R. Howe, Boston.—p. 275.
- Spontaneous Rupture of Heart: Report of Forty Cases in Portland, Ore. R. L. Benson, W. C. Hunter and C. H. Manlove, Portland, Ore.—p. 295.
- Comparison of Cellular Reaction in Experimental Tuberculosis of Cornea in Animals of Varying Resistance. E. R. Long, S. W. Holley and A. J. Vorwald, Chicago.—p. 329.
- Origin of Epithelioid Cell in Experimental Tuberculosis of Cornea. E. R. Long and S. W. Holley, Chicago.—p. 337.
- Histologic Changes in Thyroid Gland of White Rat Exposed to Cold. A. T. Kenyon, Chicago.—p. 347.
- *Fibrosis Uteri. A. B. Baker, Minneapolis.—p. 369.
- *Haemophilus Haemolyticus Endocarditis. D. A. De Santo and Mosetta White, New York.—p. 381.

Fibrosis Uteri.—Baker studied the collagenous tissue of the myometrium of forty uteri obtained at necropsy and nineteen removed at operation. The material consisted of thirteen uteri from nulliparas dead of accidental causes, seven from nulliparas dead of acute infectious processes, fourteen from cases in which death was caused by a chronic disease, ten from cases of acute pelvic inflammation, and fifteen from cases in which there was a history of abnormal bleeding. Blocks were taken from various parts of the uterine wall and fixed in both formaldehyde and Zenker's solutions and stained with Weigert-Van Gieson, azocarmine, Weigert's elastic tissue and hematoxylin-eosin. He observed that with the advance of age there occurs within the uterine wall a gradual increase of collagenous fibers that ultimately replace the greater part of the muscle. Neither localized nor systemic acute processes have any effect on the uterine wall. Chronic diseases have no effect on the uterine wall of young nulliparas but hasten the

age fibrosis in older nulliparas. The uterine arteries show less pronounced changes with age than the uterine musculature. The three alterations most commonly found are medial fibrosis, medial calcification and intimal atherosclerosis. There is no satisfactory evidence that either fibrosis of the uterine wall or increase in elastic tissue, following pregnancy, is responsible for uterine hemorrhage.

Haemophilus Haemolyticus Endocarditis.—De Santo and White report a case of *Haemophilus haemolyticus* endocarditis associated with *Streptococcus viridans* infections. Their case represents the second recorded instance of infection by the former micro-organism. The infection was complicated by pregnancy. A probable portal of entry was demonstrable in the form of an organizing bronchopneumonia. A myeloid reaction was exhibited in the liver and spleen and probably represented the effect of a severe and prolonged overstimulation of the bone marrow by a bacterial toxin, with a resultant deposition of many immature marrow cells in the hematopoietic organs. Some unusual embolic phenomena were present in the coronary arteries. A villous endocarditis on the anterior mitral leaflet abounding in bacteria was contrasted with a proliferative reaction on the posterior leaflet. The latter reaction, together with a type of recently described "palisade formation," is reported for the first time in subacute bacterial endocarditis. The existence of an additional lesion, described as a fibrinoid or hyaline swelling and degeneration of collagen valve substance previously demonstrated in rheumatic valvulitis and in rheumatic auricular endocarditis, is present in subacute bacterial endocarditis.

American Journal of Public Health, New York

23: 407-546 (May) 1933

- Application of Principles of Water Purification to Control of Swimming Pools. A. H. Fletcher, Memphis, Tenn., and A. E. Clark, Nashville, Tenn.—p. 407.
- Risk of Persons in Familial Contact with Pulmonary Tuberculosis. W. H. Frost, Baltimore.—p. 426.
- Medical Examination of Domestic Servants. C. V. Craster, Newark, N. J.—p. 433.
- Sunlight and Health. H. Emerson, New York.—p. 437.
- Health Problems Peculiar to Southern States. J. A. Ferrell, New York.—p. 441.
- Industry in Medicine. C.-E. A. Winslow, New Haven, Conn.—p. 450.
- Suggested Method of Computing and Standardizing Maternal Mortality Rate. R. J. Lowrie, New York.—p. 459.
- Present Status of Handling Water Samples: Comparison of Bacteriological Analyses Under Varying Temperature and Holding Conditions, with Especial Reference to Direct Method. Elfreda L. Caldwell and L. W. Parr, Andalusia, Ala.—p. 467.
- Whooping Cough Plates in Public Health Laboratory. E. K. Kline, Olean, N. Y.—p. 493.
- Standardization of Complement Fixation Test for Syphilis. Ruth Gilbert, Albany, N. Y.—p. 499.

Annals of Internal Medicine, Ann Arbor, Mich.

6: 1371-1516 (May) 1933

- Clinical Significance of Systolic Murmur: Study of One Thousand Consecutive "Noncardiac" Cases. A. R. Freeman and S. A. Levine, Boston.—p. 1371.
- Apoplexy: Study of Eight Hundred and One Cases Admitted to the Kings County Hospital During the Five Years from 1923 to 1928. O. C. Perkins, Brooklyn.—p. 1386.
- Pernicious Anemia Without Achlorhydria: Case Report. E. A. Harvey and W. P. Murphy, Boston.—p. 1393.
- Standardization of Diabetics with Diet and Insulin. J. T. Beardwood, Jr., Philadelphia.—p. 1407.
- Insulin Hypoglycemia: Two Cases with Convulsions; One Necropsy Report. B. D. Bowen and G. Beck, Buffalo.—p. 1412.
- Incidence of Tuberculosis in Diabetes. L. I. Kramer and H. A. Lawson, Providence, R. I.—p. 1426.
- Primary Hypochromic Anemia: Its Importance in Medical and Surgical Diagnosis. J. E. Walker, Opelika, Ala.—p. 1434.
- *Effect of Liver Therapy on Neurologic Aspects of Pernicious Anemia. P. H. Garvey, P. M. Levin and E. I. Guller, Rochester, N. Y.—p. 1441.
- *Cinchophen Hypersensitiveness: Report of Four Cases and Review. C. L. Short and W. Bauer, Boston.—p. 1449.
- Comparative Study of Choleric Effect of Bile Salts and Oleic Acid and Bile Salts. R. Finkelstein and E. W. Lipschutz, Brooklyn.—p. 1465.
- Lobar Pneumonia: Report of Two Thousand and Thirty-Nine Cases. O. S. Warr and J. Alperin, Memphis, Tenn.—p. 1474.
- Twins as Biologic Controls in Study of Human Constitution: Additional Approach to Study of Clinical Medicine. H. M. Margolis and V. W. Eisenstein, Pittsburgh.—p. 1489.

Effect of Liver Therapy on Pernicious Anemia.—Garvey and his associates present the results of a study of forty-seven cases of pernicious anemia. The treatment consisted of the daily administration of liver or liver extract by mouth without significant periods of interruption. The average dura-

tion of treatment in the entire series was twenty-five months. Of the forty-seven patients, twenty-nine presented both symptoms and signs of spinal cord degeneration, ten had symptoms but no signs of nervous system involvement, and three had no indication of this complication. The remaining five patients had prominent psychic disorders. In forty patients, treatment was regular and uninterrupted; this was adequate in twenty-five. In twenty-four of the adequately treated patients who complained of paresthesias, fourteen reported that this symptom improved or disappeared. It remained unchanged in four. In six, the paresthesias became more severe, in parallel with signs of a steady progression of the cord degeneration. In the poorly treated group, the proportion of patients whose paresthesias improved is smaller. Ataxia was a prominent feature in fourteen of the well treated patients, six of whom improved. In contrast to the influence of the treatment on the symptoms, the objective examination of the nervous system in the series indicated a progression of the cord degeneration in ten of seventeen adequately treated patients. All but one of these showed extension of the process to the lateral columns. In six, the abnormal signs remained unchanged. Demonstrable improvement occurred in only one, in whom there was a return of joint sensibility without a return of perception of vibration or a change in reflexes. Of ten patients who received inadequate treatment, the signs progressed in eight and remained stationary in two. One patient of this group developed paraplegia in flexion. Treatment to be effective should be given before degenerative changes in the cord are well established. Treatment should not be interrupted, as its interruption in several cases has been followed by aggravation of the signs and the symptoms referable to the nervous system.

Cinchophen Hypersensitiveness.—Short and Bauer report four cases of allergic reactions to cinchophen and its derivatives and summarize thirty-seven others from the literature. The pharmacology and the therapeutic and toxic actions of this group of drugs are briefly reviewed. Many cases appear to show an idiopathic, nonacquired sensitiveness, but previous use of the drug is not entirely ruled out. Readministration has invariably produced a similar allergic reaction, often following immediately on the first dose. While only six cases were associated with hepatic involvement, the appearance of dermatitis or other allergic manifestations is believed to indicate: first, the immediate and final withdrawal of the drug; second, the prophylactic administration of dextrose for at least one week.

Archives of Internal Medicine, Chicago

51: 643-818 (May) 1933

- Hydrophobia: Report of Two Fatal Cases with Pathologic Studies in One. D. Riesman, W. W. Fox, B. J. Alpers and D. A. Cooper, Philadelphia.—p. 643.
- *Treatment of Secondary Anemia, with Especial Reference to Use of Liver Extract Intramuscularly. W. P. Murphy, Boston.—p. 656.
- *Avitaminosis in Natives of Rhodesia: Treatment of Epidemic Scurvy by Intravenous Injection of Citrus. T. J. Dry, Rochester, Minn.—p. 679.
- Bronchial Disinfection and Immunization: II. Effects in Rabbits of Intrabronchial Injections of Vaccines, Bacteriophage and Antiviral. J. A. Kolmer, Philadelphia.—p. 692.
- Experimental Edema in Nephrectomized Dogs: III. Serum Proteins and Effusion Fluids. C. J. Farmer, F. S. Barry, Alice Reed and A. C. Ivy, Chicago.—p. 704.
- Cardiospasm, with a Review of the Literature. M. Sturtevant, New York.—p. 714.
- Mode of Production of First Heart Sound. W. Dock, San Francisco.—p. 737.
- Cytoplasmic Changes in Circulating Leukocytes in Infection. C. J. Sutro, New York.—p. 747.
- Syphilis of Stomach, with Especial Reference to Significance of Spirochetes. H. A. Singer, Chicago.—p. 754.
- *Experimental Coronary Occlusion: Inadequacy of Three Conventional Leads for Recording Characteristic Action Current Changes in Certain Sections of Myocardium; an Electrocardiographic Study. F. C. Wood and C. C. Wolferth, with technical assistance of Mary M. Livezey, Philadelphia.—p. 771.
- *Immune Reactions in Diabetes. J. K. Moen and H. A. Reimann, Minneapolis.—p. 789.
- Effect of Anoxemia on Emptying Time of Stomach. E. J. Van Lierc, G. Crisler and D. Robinson, Morgantown, W. Va.—p. 796.
- Consumption of Blood Sugar by Muscle in Nondiabetic and in Diabetic State. W. M. Yater, J. Markowitz and R. F. Cahoon, with the technical assistance of W. H. Burrows, Washington, D. C.—p. 800.

Treatment of Secondary Anemia.—Murphy records the results of treatment by various means of a group of patients with hypochromic anemia. He makes a comparison of the

effect on the blood of the types of treatment carried out and reported in this and two previous papers and draws the following conclusions: 1. Treatment by means of intramuscular injections of solution of liver extract (Lederle) together with adequate doses of iron (ferric ammonium citrate) by mouth is the most effective, although the combination of large doses of whole liver and iron by mouth is effective but less readily used. 2. Of the various substances other than whole liver that were given by mouth, ferric ammonium citrate and pills of ferrous carbonate U. S. P. were about equally effective and outranked the others in blood-building effect. The optimal dose of these salts is that which supplies daily 500 mg. of iron (ferric ammonium citrate, 3 Gm.; pills of ferrous carbonate, 5.4 Gm.). 3. Iron hydroxide used intravenously proved to be moderately effective but without advantage over the iron administered by mouth.

Avitaminosis in Rhodesia.—Dry gives an account of an outbreak of scurvy among Rhodesian native laborers, and of the manifestations of this disease, as well as of associated forms of avitaminosis. The treatment adopted consisted in the intravenous administration of specially prepared and neutralized orange or lemon juice. The method used for the preparation of the extract was as follows: The juices were expressed from fresh oranges or lemons, previously immersed in a 5 per cent solution of phenol to sterilize the skin of the fruits. The extract so obtained was filtered under aseptic conditions and then rendered neutral or slightly alkaline by the addition of 20 per cent sodium hydroxide. This was always freshly prepared and used the same day. The initial dose was 5 cc.; thereafter, from 10 to 15 cc. two times a week. When circumstances similar to those described arise, the intravenous use of specially prepared orange and lemon juices may be relied on as a safe and efficient method of controlling scurvy. That the vitamin C content of citrus juices is not appreciably impaired by neutralization immediately before its administration is evidenced by the rapid recovery of scorbutic patients after its use.

Experimental Coronary Occlusion.—Wood and Wolferth state that the dog presents a situation analogous to that existing in man, with respect to occlusion of the coronary arteries. Their experiments show that infarction in some parts of the heart produces a deviation of the RST interval from the iso-electric line in the conventional electrocardiogram. Electrograms show that the failure of certain infarcts to affect the limb lead electrocardiogram is not due to a failure of the development of changes in the action current in the infarcted area. By means of direct heart leads, deviations of the RST interval may be recorded within a few minutes after infarction of any part of the surface of the heart. If conduction from all surfaces of the heart is adequate and an anteroposterior chest lead is used in addition to the routine limb leads, a deviation of the RST interval can be recorded in one or more leads after occlusion of any one of the three main coronary arterial trunks. This is likewise true of occlusion of some of the branches of these arteries. Deviation of the RST interval due to occlusion of the left anterior descending coronary artery appears only in the anteroposterior chest lead. When the right and the left arm lead wires are used and when the electrodes are placed on opposite sides of the chest, an infarct located beneath the former produces a depression of the RST interval; one located beneath the latter produces an elevation of this interval. The direction of the deviation of the RST interval and the lead in which it makes its maximum appearance serve to indicate the location of the infarct. Therefore more accurate electrocardiographic localization of myocardial infarcts may be attained in man by the use of chest leads in addition to the three conventional ones. Deviations of the RST interval after coronary occlusion in the dog appear within two minutes. No additional impairment of the coronary circulation or of the general circulation is necessary for the production of deviation of the RST interval beyond that produced by occlusion of a coronary artery. This series of experiments demonstrates that in the dog deviation of the RST interval from the iso-electric line is a characteristic result of acute infarction of any part of the surface of the heart. Failure to record this electrocardiographic change in previous similar experiments has often been due to failure to apply the electrodes to the surface of the body in the proper locations. The necessity for augmenting the

three conventional leads is apparent if a more nearly adequate electrocardiographic picture of cardiac events is to be obtained.

Immune Reactions in Diabetes.—In their study concerning immune reactions in diabetic patients, Moen and Reimann observed the skin reaction to tuberculin in sixty-five diabetic patients and in sixty-five nondiabetic control subjects who were apparently free from evidence of tuberculosis. They used the Mantoux test; 0.1 cc. of a 1:1,000 dilution of old tuberculin was injected intradermally. The skin reactions were read forty-eight hours later. A reaction was considered positive when erythema at least 1 cm. in diameter, with or without induration, appeared after forty-eight hours. Positive reactions appeared in twenty-nine (44 per cent) of the diabetic patients and in 16 (24 per cent) of the control patients. The authors observed the development of agglutinins for typhoid bacilli after the vaccination of diabetic patients and normal persons. In well patients with controlled diabetes, agglutinins developed in titers similar to those in normal persons used as controls. In patients with diabetes that was controlled with more difficulty, the agglutinin response was distinctly weaker. In patients with uncontrolled diabetes with acidosis, the agglutinin response was poor; in a few cases no agglutinin for certain strains appeared. The coincidence of the increased susceptibility of severely ill diabetic patients and the deficiency of demonstrable antibodies suggests a causal relationship of the latter to the former condition.

Archives of Pathology, Chicago

15: 611-754 (May) 1933

- Comparative Histologic Reactions in Cutaneous Lesions Induced by Streptococci in Rabbits Previously Inoculated Intracutaneously or Intravenously. R. Böhmig and H. F. Swift, New York.—p. 611.
- *Gumma of Hypophysis and Hypothalamus. E. B. Fink, Chicago.—p. 631.
- Weights of Various Organs in Adult Rat After Inanition With or Without Dietary Accessories. C. E. McLennan and C. M. Jackson, Minneapolis.—p. 636.
- Metastasizing Chondrosarcoma of Coronoid Process of Mandible. J. G. Pasternack and R. D. Lillie, Washington, D. C., and R. A. Jones, San Francisco.—p. 649.
- *Multilobar Cystic Lymphangioma of the Spleen. C. W. McLaughlin and J. S. P. Beck, Philadelphia.—p. 655.
- *Suprarenalin-Producing Pheochromocytoma of Suprarenal Gland: Report of Case. F. K. Hick, Chicago.—p. 665.
- Aberrant Growths in Regenerating Claws of Hermit Crab Under Influence of Sulphydryl: Their Relation to Neoplasia. S. P. Reimann, Philadelphia.—p. 675.
- Etiology of Gallstones. E. L. Walsh, Chicago.—p. 698.

Gumma of Hypophysis and Hypothalamus.—Fink reports a case of gumma of the hypophysis, which was typical of cerebral vascular syphilis with meningitis of the base of the brain involving the left oculomotor nerve and the optic chiasm. The symptoms indicating hypofunction of the anterior lobe of the hypophysis were amenorrhea and cachexia. Necropsy disclosed, in addition, gummatous destruction of the hypophysis and inter-brain. Polyuria was not present in this case in spite of the presence of a gumma in the tuber cinereum. In the presence of signs of cerebral syphilis, the occurrence of hypopituitary symptoms, such as severe cachexia, amenorrhea or pituitary dystrophy, justifies the diagnosis of gumma of the hypophysis. Polyuria indicates involvement of the infundibulum or of the tuber cinereum. Tremor, weakness of the extremities, unstable gait, atrophy of the extremities and hypertonia may occur when the thalamus is destroyed by a gumma. Acromegaly cannot be caused by syphilitic involvement of the hypophysis, because syphilis always produces destructive effects in parenchymatous organs, whereas acromegaly is an expression of hyperfunction of the hypophysis.

Multilobar Cystic Lymphangioma of the Spleen.—McLaughlin and Beck describe a large nonparasitic cyst of the spleen treated successfully by splenectomy. The history was negative for trauma, and there were no demonstrable foci of infection. Clinically, there was no evidence of arterial disease. The intrasplenic vessels, inspected by dissection, were found to have an abnormal relationship secondary to the cystic enlargement. Microscopically, arteriosclerotic changes, commonly seen in grossly normal spleens, were found. A careful gross and microscopic study of the specimen was made, and multilobar cystic lymphangioma of the spleen was diagnosed. It is shown that a consideration of the principles of hydraulics in connection with the rate of proliferation simplifies the problem of the pathogenesis of cystic tumors.

Epinephrine-Producing Pheochromocytoma of Suprarenal.—Hick gives the postmortem observations of a case of pheochromocytoma of the suprarenal in a woman, aged 64, who died from a ruptured aneurysm of the anterior communicating artery. He states that the tumor is usually benign, having a characteristic microscopic aspect and staining reactions. Pheochromocytoma produces a pressor substance like or identical with epinephrine, even if independent of contact with the cortex. No connection can be validated between the suprarenal, its hyperplasias or tumors and the general type of essential hypertension, arteriosclerosis or nephritis. Paroxysmal hypertension cannot as yet be explained as a phenomenon produced by transient hypersuprarenalinemia such as might arise in a patient bearing pheochromocytoma.

Endocrinology, Los Angeles

17: 239-362 (May-June) 1933

- Differentiation as Effected by Diiodotyrosine Plus Certain Other Amino Acids. Olive Hoffman and F. Gudernatsch, New York.—p. 239.
- *Endocrine Growth Deficiencies: Diagnosis and Treatment: Preliminary Clinical Report. W. Engelbach, R. L. Schaefer and W. L. Brosius, Detroit.—p. 250.
- Diseases of Suprarenal Glands. L. G. Rowntree and R. G. Ball, Rochester, Minn.—p. 263.
- Effects of Urinary Hebin on Immature Male Rats. M. Molien, F. E. D'Amour and R. G. Gustavson, Denver.—p. 295.
- *Polarization Capacity of Skin as Index of Thyroid Function. M. G. Wohl, Philadelphia.—p. 299.
- Hazards in Treatment of the Elderly Diabetic: Report of Cases. A. Rudy, Boston.—p. 309.

Endocrine Growth Deficiencies.—Engelbach and his associates treated seven persons presenting endocrine deficiency of growth and varying degrees of dwarfism with a commercial preparation of the pituitary growth hormone. All showed a favorable response. That this response was due to specific therapy is evident from the fact that all patients were under observation for a period of from two to six months before treatment was started and that none, with the exception of one, showed growth during the control period. The duration of specific treatment with the growth hormone was from three to five months. Their statural growth was increased from 1 to 2 $\frac{7}{8}$ inches. One patient showed a growth of one-half inch in five months under thyroid therapy, but when placed on the preparation of pituitary growth hormone he grew 2 $\frac{7}{10}$ inches in five months. Treatment was started with an initial dose of 0.5 cc., subcutaneously, from three to five times each week. This was rapidly increased in 0.5 cc. amounts until a total of 5 cc. per dose was given. It was the authors' intention to give even larger doses, but because of the scarcity of the extract it was necessary to reduce the dose to 2 cc. There was one reaction that consisted of slight swelling and redness at the site of injection. The patients showing thyroid insufficiency were given desiccated thyroid orally to tolerance. In the diagnosis of functional deficiencies of growth the authors stress two objective criteria, statural measurements and roentgenographic studies of the osseous centers.

Skin Polarization and Thyroid Function.—Wohl determined the polarization capacity of the skin in a group of thirty-six patients in whom a thyroid disorder was clinically suspected as the cause of asthma, cholecystitis, cardiorenal disease or diabetes mellitus by means of a modified Wheatstone bridge adapted to simultaneous measurements of capacity and resistance. In a group of sixteen healthy adults, the polarization capacity of the skin of the upper part of the body varied between 0.75 and 0.8 microfarad; the measurement of the lower part of the body varied from 0.35 to 0.45 microfarad. In eleven patients with thyrotoxicosis, the polarization capacity of the skin of the upper part of the body varied from 0.77 to 1.99 microfarads. The basal metabolic rate varied from plus 19 per cent to plus 95 per cent. There was no apparent parallelism between the basal metabolic rates and the polarization capacity of the skin. In three patients of this group, the polarization capacity of the skin after thyroidectomy was perceptibly lower than before the operation. The basal metabolic rates were likewise reduced after thyroidectomy. In the hypothyroid patients, the polarization capacity of the skin of the upper part of the body varied from 0.36 to 0.57 microfarad. The author suggests that the polarization capacity of the skin might be employed as another means of determining thyroid activity.

Indiana State Medical Assn. Journal, Indianapolis

26: 259-304 (June 1) 1933

- Transurethral Operations on Prostate. W. N. Wishard, H. G. Hamer, H. O. Mertz and W. N. Wishard, Jr., Indianapolis.—p. 259.
- Rôle of Glucose in Diagnosis and Therapy. W. P. Moenning, Indianapolis.—p. 263.
- Medical Economics from Standpoint of Hospital Administration. P. Fesler, Chicago.—p. 267.
- Current Trends in Medical Practice. R. G. Leland, Chicago.—p. 269.
- Diverticulosis of Colon. W. E. Pennington, Indianapolis.—p. 272.
- *Neoparsphenamine in Tularemia: Case Reports. W. S. Fisher, Columbus.—p. 273.
- Unusual Dislocation of Patella. J. R. Bloomer, Rockville.—p. 274.
- Observations on Use of K Medium in Blood Cultures and Bacterial Culture of Human Tissue. F. W. Taylor, Indianapolis.—p. 275.

Neoparsphenamine in Tularemia.—Fisher states that three patients suffering from tularemia responded promptly and satisfactorily to three or four injections of neoparsphenamine. The initial dose employed was 0.45 Gm. The injection was repeated in from five to seven days with a dosage of 0.6 Gm. The third dose was usually increased to 0.75 Gm. It has not been necessary to give more than five doses. The primary lesion responded to treatment exactly in the same manner as the primary lesion of syphilis. The pain and swelling at the site of the primary lesion and of the accompanying member begin to disappear after the first injection. Tenderness is likely to persist for some time after healing has taken place. The improvement in the general condition of the patient, the increase of appetite, and the decrease in temperature are just as satisfactory as the improvement in the primary lesion. Two of the patients experienced an improvement in their sense of well being almost immediately after each treatment. The other patient, who had been bedfast for several weeks, insisted on sitting up on the same day as the injection. The author dressed the primary lesions with 10 per cent ammoniated mercury ointment until they were clean and dry, and then he applied dry dressings.

Journal of Allergy, St. Louis

4: 239-346 (May) 1933

- Preservation of Reagin in Dried Serum. M. R. Lichtenstein, Chicago.—p. 239.
- Late Vaccine Skin Reaction. W. S. Thomas and M. D. Touart, New York.—p. 242.
- Importance of Chenopodiaceae in Pollinosis, with Especial Reference to Winslow and Holbrook, Arizona. R. W. Lamson and Alva Watry, Los Angeles.—p. 255.
- Studies in Asthmatic State: II. Reaction. H. S. Baldwin, New York.—p. 282.
- Bronchoscopy in Asthma. L. E. Prickman and P. P. Vinson, Rochester, Minn.—p. 286.
- Relationship of So-Called Status Thymicolymphaticus to Allergy: Based on Autopsy Study of Thirty-Eight Cases. G. L. Waldbott, Detroit.—p. 294.
- Migraine: Some Considerations of Allergy as Factor in Familial Recurrent Headache. H. J. Rinkel, Kansas City, Mo.—p. 303.
- *Observations on Incidence of Hypersensitive State in One Hundred Cases of Epilepsy. W. B. Adamson and E. D. Sellers, Abilene, Texas.—p. 315.
- Localized Purpura Associated with Malaria: Case Report. A. G. Cazort, Little Rock, Ark.—p. 324.
- Sensitizations of Eczematous Type: Ten Selected Cases Illustrating Some Uses of Patch Test. Marion B. Sulzberger and Phyllis Kerr, New York.—p. 326.
- *Clinical Urticaria and Hay Fever: Unusual Symptom Complex: Case Report. L. Sternberg, New York.—p. 336.
- Eczematous Dermatitis Due to Exposure to Chloral. E. W. Abramowitz and M. H. Noun, New York.—p. 338.

Hypersensitive State in Epilepsy.—Adamson and Sellers observed in a study of 100 selected cases of epilepsy that the occurrence of hypersensitive manifestations in the antecedents is higher than that in normal persons but lower than that reported in such accepted hypersensitive conditions as hay fever and asthma. The low incidence of hay fever, asthma and eczema in the patients of this series is noted. The occurrence of demonstrable atopic reagins in the serums of 11 per cent of this series is somewhat higher than expected in normal persons but is much lower than that reported in such accepted hypersensitive conditions as hay fever and asthma. The authors' analysis indicates a greater incidence of the hypersensitive state in this series of epileptic patients, as determined by the occurrence of hypersensitive manifestations in the antecedents and by demonstrable atopic reagins, than in normal persons.

Urticaria and Hay Fever.—Sternberg reports the case of a man, aged 28, who gave a history of attacks of autumnal hay

fever for three seasons. But during the fourth season (1929) he was troubled with general urticaria. Skin tests with ragweed extract gave marked reactions to dilutions containing 0.0001 and 0.001 mg. of nitrogen per cubic centimeter. Because of the numerous lesions over his chest and back, he was tested with the foods habitually eaten. Orange and lamb gave marked reactions. The patient was instructed to avoid these foods and, in addition, received daily injections of ragweed extract. Both urticaria and hay fever improved a great deal, giving the impression that the cessation of urticaria was probably due to the abstinence from orange and lamb. During the next two years preseasonal treatment was given, and during both seasons the patient had no urticarial lesions, although he did have slight attacks of hay fever. Lamb and orange were eaten during this time. The following year preseasonal injections were not given, and the patient appeared first on September 2. Hay fever symptoms began on August 23 and urticaria on the following day. The skin lesion was general and severe. Cutaneous tests gave marked reactions to the previous dilutions. Tests with lamb and orange were negative. Patch tests with ragweed oil did not produce a wheal or a dermatitis. Injections of ragweed extract were given daily for four successive days, then every second day. Improvement was noted after the fourth injection, and in a week the urticaria had disappeared. This patient had never had urticaria except with hay fever.

Laryngoscope, St. Louis

43: 351-434 (May) 1933

- Glands of Esophagus. P. E. Ireland, Boston.—p. 351.
Some Causes and Therapy of Ozena: Report of One Hundred and Thirty-Five Cases. C. W. Trexler, Honolulu, H. I.—p. 369.
Nasal Obstruction in Children Due to Septal Abnormalities: What Shall We Do for Them? W. W. Carter, New York.—p. 377.
Some Clinical Observations in Labyrinthitis. D. S. Cuning, New York.—p. 383.
Value of Dry Treatment in Acute Infections of Ear and Mastoid. H. B. Blackwell, New York.—p. 390.
Gangosa: Occurrence in a White Man. M. C. Myerson, New York.—p. 394.
Treatment of Allergy Based on Conception That It Is a Potential Alkalosis. A. M. Alden, St. Louis.—p. 400.
Treatment of Otorhinologic Conditions with Free Iodine Administered Subcutaneously. J. R. Bishop, Salisbury, Md.—p. 411.
Some Experiences with Newer Drugs. M. C. Johnson, Fort Smith, Ark.—p. 414.
Presentation of Instrument: Scissors-Hemostat. A. F. Warren, New York.—p. 417.

Michigan State M. Society Journal, Grand Rapids

32: 307-348 (May) 1933

- Some Modern Extensions of Beaumont's Studies on Alexis St. Martin: III. Digestive Disturbances Produced by Pain and Emotional Excitement. W. B. Cannon, Boston.—p. 307.
*Importance of Water in Treatment of Renal Disease. F. H. Lashmet, Ann Arbor.—p. 317.
Some Facts Concerning Retinal Vessels in Hypertension. G. F. Suker, Chicago.—p. 319.
Acute Cranial and Intracranial Injuries. H. K. Shawan, Detroit.—p. 324.

Water in Treatment of Renal Disease.—Lashmet subjected patients presenting various types of renal disease to extreme water restriction (700 cc. for twenty-four hours). It was found that when the nephrotic type of edema was absent a large volume of urine was excreted in which there was a normal amount of excretory wastes. The extra water was obtained at the expense of body water. When the nephrotic type of edema was present, there was a small volume of urine and retention of excretory wastes. Presumably, the body water was so firmly fixed in the tissues that it was not released for urine formation. When water was allowed, the two groups of patients responded with a large volume of urine and an increased excretion of waste products. In renal disease, regardless of the type and whether edema is present or absent, an enormous fluid intake is imperative if retention of wastes is to be avoided.

Military Surgeon, Washington, D. C.

72: 365-420 (May) 1933

- Development of Surgery of Colon and Rectum. F. W. Rankin.—p. 365.
Dynamic Mean Blood Pressure and Army Retirement. G. M. Hoyos.—p. 377.
Improved Garbage Can Fly Trap and Efficient Fly Trap Bait Holder. A. P. Hitchens.—p. 381.
Bilateral Pneumothorax: Report of Case Following Trauma of Abdomen. J. P. Dean.—p. 388.
Periarterial Sympathectomy in Treatment of Endarteritis Obliterans. R. A. Kordenat.—p. 392.

Minnesota Medicine, St. Paul

16: 379-456 (June) 1933

- Survey of Causes of Hay Fever for the State of Minnesota. R. V. Ellis and C. O. Rosendahl, Minneapolis.—p. 379.
Allergy in Field of Ophthalmology and Otolaryngology. J. A. Watson, Minneapolis.—p. 390.
*Low Basal Metabolic Rates: Clinical Study of States of Lowered Basal Metabolism Found in Conditions Other Than Myxedema. J. B. Carey and Helene Paine Brumfield, Minneapolis.—p. 396.
Remarks on Certain Special Methods of Anesthesia. J. S. Lundy, Rochester.—p. 402.
Intussusception. F. C. Rodda, Minneapolis.—p. 405.
Fatal Postoperative Pulmonary Embolism. E. C. Bartels, Duluth.—p. 409.
Transplantation of Ureters to Sigmoid Colon for Exstrophy of Bladder and Other Ureteral Abnormalities with Urinary Incontinence. W. Walters, Rochester.—p. 416.
Pathology of Bladder Neck Obstruction, with Particular Reference to Cystoscopic Prostatectomy. P. F. Donohue, St. Paul.—p. 420.
Litholapaxy: Neglected or Forgotten Procedure. J. M. Culligan and H. J. Prendergast, St. Paul.—p. 426.
Urology in Middle Europe. C. D. Creevy, Minneapolis.—p. 428.

Low Basal Metabolic Rates.—From a study of 489 cases showing a basal metabolic rate of minus 10 or less in 2,500 consecutive cases (patients having myxedema were not included), Carey and Brumfield conclude that: 1. Patients presenting certain symptoms of fatigue, general aches and pains of the body and apprehensive anxiety states should have basal metabolic rate determinations. 2. It may be helpful as a guide to therapy in certain postinfectious states and at the menopause. 3. Such determinations should be made as a part of the study of male or female sterility when no organic or functional cause is found. 4. Such study should be made in all women suffering from menstrual abnormalities not explained on an organic basis. 5. Cases of habitual abnormal pregnancy should likewise be so studied. When a low basal metabolic rate is found in any of these conditions, thyroid substance should be administered to an extent and for as long as seems sufficient to raise the rate to normal and to maintain it. It should be discontinued only if not tolerated, or after a sufficient length of time has elapsed so that it can be certainly declared ineffective. The authors' percentage of improvement in the treated patients with adequate follow-up (62.8 per cent) supports this belief, which is further strengthened by the results in the treatment of sterility and threatened abortion. Pregnancy occurred in seven of twenty-nine sterile women. Eleven patients had no adequate follow-up. Successful pregnancies resulted in four of five patients with threatened abortion or in whom abortions had occurred in previous pregnancies.

Missouri State Medical Assn. Journal, St. Louis

30: 185-228 (May) 1933

- Use of Iodine in Goiter. W. Baumgarten, St. Louis.—p. 185.
Recent Progress in Pregnancy Tests. F. B. Kyger, Kansas City.—p. 189.
Importance of Roentgen-Ray Diagnosis of Spontaneous Pneumoperitoneum and Traumatic Pneumoperitoneum. E. W. Spinzig, St. Louis.—p. 191.
Mesenteric Thrombosis Following Appendicitis; Resection; Recovery. W. M. Jones, St. Louis.—p. 196.
Appendicitis: Definite Etiology and Possible Common Cause of Other Disorders of Digestive Tract. L. A. Millikin, St. Louis.—p. 202.
Manic Phase of Manic Depressive Psychosis and Its Treatment. L. H. Kohler, St. Louis.—p. 208.
Brief History of Lithotomy. A. L. Osborn, Kansas City.—p. 209.
Mental Health of Parents. W. C. Menninger, Topeka, Kan.—p. 212.

New England Journal of Medicine, Boston

208: 971-1026 (May 11) 1933

- Importance of Location in Differential Diagnosis of Benign and Malignant Gastric Ulcerations. G. W. Holmes, Boston, and A. O. Hampton, Arlington, Mass.—p. 971.
Psoas Abscess of Pyogenic Origin. J. D. Barney, Boston.—p. 977.
Constructive Suggestions for Medical Program. N. B. Van Etten, New York.—p. 988.
Diagnosis and Treatment of Trigeminal Neuralgia. A. M. Cram, Bridgewater, Vt.—p. 1003.
Progress in Urology. F. H. Colby, Boston.—p. 1007.

Oklahoma State Medical Assn. Journal, Muskogee

26: 143-180 (May) 1933

- Low Cervical Cesarean Section. L. C. Northrup, Tulsa.—p. 143.
President's Address.—Southeastern Oklahoma Medical Association. H. B. Fuston, Bokchito.—p. 145.
Preventive Medicine. R. D. Williams, Idabel.—p. 146.
Vertigo. R. L. Gee, Hugo.—p. 149.
Empyema of Pleural Cavity. P. P. Nesbitt, Tulsa.—p. 151.
Some Proctologic Problems. C. Rosser, Dallas, Texas.—p. 153.

Pennsylvania Medical Journal, Harrisburg

36: 565-640 (May) 1933

Causes of Trouble in Healing of Fractures. W. Darrach, New York.—p. 565.

*Investigation into Modes of Action of Blow Fly Maggots in Treatment of Chronic Osteomyelitis: Preliminary Report. M. A. Slocum, R. H. McClellan and F. C. Messer, Pittsburgh.—p. 570.

*Allergic Phenomena in Malignancy. B. Gruskin, Philadelphia.—p. 573.

Nasal Allergy. H. P. Schenck, Philadelphia.—p. 576.

Artificial Feeding of Infants in Private Practice. J. D. Donnelly, Bala-Cynwyd.—p. 578.

Use of Foreign Protein in Treatment of Ophthalmia Neonatorum and Gonorrheal Ophthalmia. L. G. Redding, Scranton.—p. 582.

Syphilis of Stomach. E. B. Edie, Uniontown.—p. 586.

Action of Maggots in Osteomyelitis.—Slocum and his associates present a preliminary report of an investigation into the modes of action of blow fly maggots in treating chronic osteomyelitis. They state that the beneficial action of blow fly maggots seems to depend on the removal of necrotic tissue, the promotion of healthy granulation and the diminution of bacteria. They show that the maggot removes necrotic tissue by means of proteolytic enzymes, the main part of the digestion taking place within the maggot. Thus, the surrounding healthy tissues are protected from the action of corrosive enzymes, since only a weak dissolving solution is excreted, the strong digestive juice being retained within the animal. Maggots render the wound alkaline by forming ammonia. The alkalinity assists in checking the growth of bacteria. Relationships between the degree of alkalinity and the number of bacteria have been noticed in cases of osteomyelitis. No bactericidal power could be associated with crushed maggots or with extracts of maggot tissue. The removal of necrotic tissue and the decrease in bacteria seem to depend for their most efficient accomplishment on the presence of living maggots, since they bring about the first condition without undue damage to tissues, while the second is dependent on their metabolic activity. The authors' observations oppose the view that extracts of maggot tissue can be used for the treatment of chronic osteomyelitis.

Allergic Phenomena in Malignant Disorders.—Gruskin describes a new test (an intradermal reaction) for the early determination of malignant conditions based on the theory that in malignant conditions the embryonic cells forming the tumor are born embryonic and remain so, in contradistinction to normal cells which gradually tend to mature. In carcinoma, the cells employed in making the antigen were obtained from the pancreas, submaxillary gland and liver of embryonic calves; in sarcoma, the stellate connective tissue cells of Wharton's jelly were used. The mammalian embryos used should not be in a later stage than the sixth week of fetal life. The pancreas or the submaxillary glands are dissected out, covered with salt solution and allowed to freeze to permit easier removal of the fibrous capsule. The capsule and ducts are removed, placed in a mortar in which clean copper gauze has been inserted, rubbed through the gauze, washed with salt solution and centrifugated. The supernatant salt solution is discarded. The epithelial cells are placed in the oven and dried until the water separates, and the water is poured off. The cells are covered with ether and shaken; the ether is decanted and the cells are left at room temperature so that the ether may evaporate. The cells are rubbed up with tenth normal solution of sodium hydroxide in the proportion of 1 Gm. of cells to 25 cc. of the sodium hydroxide solution. The solution is added to the cells, 1 cc. of the cells being rubbed at a time, so that a smooth paste will be obtained; the mixture is placed in the refrigerator for twenty-four hours and centrifugated for ten minutes at low speed, and the supernatant fluid is pipetted off and neutralized with tenth normal solution of hydrochloric acid by adding the acid drop by drop and bringing it to pH 7. In obtaining the cells from the embryonic liver, the whole liver is cleansed of its capsule and blood, placed in an Erlenmeyer flask with water and shaken vigorously until the cells are separated from the fibrous tissue; the suspension is centrifugated at high speed for fifteen minutes, the water is poured off, and the cells are washed until all traces of blood are removed and placed in 4 volumes of acetone for an hour and thoroughly shaken. The acetone is poured off and allowed to evaporate. These cells are rubbed up with 20 volumes of tenth normal solution of sodium hydroxide, allowed to stand for twenty-four hours, neutralized and prepared as in the case of the embryonic pan-

creas. In the case of sarcoma, a mixture of Wharton's jelly and the bone marrow of embryo calves is used, or only Wharton's jelly. Enough sodium hydroxide is added to the jelly to make it tenth normal; the jelly is diluted to the proper concentration with an equal amount of tenth normal solution of sodium hydroxide, allowed to stand for twenty-four hours in the refrigerator and then neutralized with tenth normal solution of hydrochloric acid to pH 7. The finished antigens are placed in vials, and to each 5 cc. of antigen 3 drops of a mixture of equal parts of tricresol and glycerin are added. For the reaction, 0.2 cc. of the antigen is introduced intradermally. The bleb after the injection must show the pitting of the hair follicles, giving the appearance of orange peel, and only then can one be sure that the injection is not too deep. The bleb should not be disturbed by pulling the skin until after fifteen minutes. In emaciated persons in whom the skin seems to fall together it may be advisable to stretch the skin, as the pseudopods may be disguised by the folding of the skin. The more chronic the case, the weaker the pseudopod formation. The author observed that the intradermal reaction has its greatest importance in early malignant conditions. He has cases on record in which the reaction has been positive but which have shown no clinical evidence until two years later.

Psychoanalytic Quarterly, New York

2: 181-360 (April) 1933

Relation of Structural and Instinctual Conflicts. F. Alexander, Chicago.—p. 181.

Psychoanalytic Theory of Play. R. Wälder, Vienna, Austria.—p. 208.

Studies in Pathogenesis: Biologic and Psychologic Aspects. F. Deutsch, Vienna, Austria.—p. 225.

Dynamics of Stammering. I. H. Coriat, Boston.—p. 244.

Outline of Clinical Psychoanalysis. O. Fenichel, Berlin, Germany.—p. 260.

Public Health Reports, Washington, D. C.

48: 521-548 (May 19) 1933

Relationship Between Rocky Mountain Spotted Fever and "Exanthematic Typhus of São Paulo." R. E. Dyer.—p. 521.

Maternal, Fetal and Neonatal Mortality Among One Thousand Eight Hundred and Fifteen Hospitalized American Indians. E. Blanche Sterling.—p. 522.

Rat Harborage and Its Relation to Spread of Bubonic Plague. B. E. Holsendorf.—p. 535.

48: 549-596 (May 26) 1933

*Preparation of Scarlet Fever Streptococcus Toxoid and Its Use in Active Immunization. M. V. Veldee.—p. 549.

Observations on Heart Disease in Marine Hospital Practice: Study of Organic Heart Disease in the United States Marine Hospital, Stapleton, N. Y., During the Fiscal Year 1931. O. F. Hedley.—p. 565.

Scarlet Fever Streptococcus Toxoid.—Veldee presents a method for the concentration of the toxin elaborated by the hemolytic streptococcus of scarlet fever origin by which the toxin content is increased approximately fourfold without causing an increase in the total nitrogen content of the preparation above that now present in commercial unconcentrated toxins. This concentrated toxin may be detoxified by the action of formaldehyde and storage at 37 C. in approximately sixty days so that there remains less than 0.5 per cent of the skin reacting factor. This residual appears to be irreducible through continued storage. Its character is not fully understood, though it appears that it can be neutralized by antitoxin. Single injections into susceptible white rabbits indicate that this detoxified product possesses antigenic properties, though the detoxification process apparently does destroy a portion of the antigen. Tests on susceptible persons indicate that toxoid, possessing the characteristics of toxoid Td-16 (estimated potency of the raw toxin per cubic centimeter 175,000 and after detoxification 500), may be given in a three-dose method to children under 15 years of age without subsequent reactions except local erythema in a majority of the children, accompanied by induration in a few and tenderness in a still smaller number, and mild systemic symptoms (slight fever, headache) in only an occasional individual. Of the 1,168 persons retested with one skin test dose of the control toxin one month after the last injection, 972, or 83.2 per cent, were Dick negative. Of 494 persons retested again on an average of eight months after the last dose, 87 per cent were negative as compared with 87.3 per cent on the first retest. The author emphasizes that the results reported in this study were obtained through the use of a single strain of hemolytic streptococcus, which had been cultured in a manner that

he describes. It is not known whether similar results could have been obtained through the use of other strains and other methods.

Surgery, Gynecology and Obstetrics, Chicago

56: 975-1104 (June) 1933

- Sweat Gland Cancer of Breast. B. J. Lee, G. T. Pack and Isabel Scharnagel, New York.—p. 975.
 Peptic Ulcers Artificially Produced in Human Being. A. J. Walton, London, England.—p. 997.
 *Osteochondritis of Growth Centers: Further Consideration. J. C. Pickett and M. Harbin, Cleveland.—p. 1000.
 Relation of Maternal Metabolism to Infant Birth Weight. W. F. Mengert, Philadelphia.—p. 1009.
 Effect of Peritoneal Irritation on Emptying Time of Gallbladder and Stomach. A. W. Oughterson and J. C. Mendillo, New Haven, Conn.—p. 1013.
 Absorption from Traumatized Muscles. R. A. Daniel, Jr., S. E. Upchurch and A. Blalock, Nashville, Tenn.—p. 1017.
 Conception Period in Normal Adult Women. A. G. Miller, C. H. Schulz and D. W. Anderson, Hobart, Ind.—p. 1020.
 Interrelationship Between Ovarian Follicle Cysts, Hyperplasia of Endometrium and Fibromyomas: Possible Etiology of Uterine Fibroids. J. T. Witherspoon, New Orleans.—p. 1026.
 Repair of High Lacerations of Rectum with Complete Incontinence: Anatomic Principles and Operative Technic. R. R. Best, Omaha.—p. 1036.
 *Arrhenoblastoma of Ovary. J. M. Taylor, S. J. Wolfemann and F. Krock, Fort Smith, Ark.—p. 1040.
 Treatment of Fractures of Bones of Leg. J. W. Martin, Omaha.—p. 1047.
 *Coincident Surgical Exposure and Radium Therapy in Treatment of Extensive Cervical Cancer. A. H. Curtis, Chicago.—p. 1052.
 *Treatment of Duodenal Fistula: Including Report of Two New Cases and Report of New Buffer Solution. J. A. Kittelson, Sioux Falls, S. D.—p. 1056.
 Fractures of Femur: Report of Three Hundred and Eight Cases. H. R. Mahorner and M. Bradburn, New Orleans.—p. 1066.
 Renal Complications of Biliary Tract Infections. W. Bartlett, Jr., St. Louis.—p. 1080.

Osteochondritis of Growth Centers.—Pickett and Harbin present three cases of osteochondritis of the growth centers, as well as a method for the investigation of the pathogenesis of this condition. They urge the necessity of prolonged avoidance of weight bearing in certain types of the disease. In order to complete the pathologic picture, the entire pathogenesis must be seen and studied. This can be accomplished if complete clinical and laboratory study of all cases is made, followed by a biopsy according to the "Key block method." It will then be possible to correlate pathologic change with gross and roentgenologic appearance. Large numbers of such cases will eventually result in a varied picture, which may allow one to gain a clear conception of the etiology of osteochondritis. The authors believe that the years necessary for healing to take place account for a great part in the variation of the microscopic changes.

Arrhenoblastoma of Ovary.—Taylor and his associates report a case of arrhenoblastoma in a girl, aged 18, who entered the hospital complaining of severe abdominal pain, a cough, fever and pain in the chest. The case illustrates the powerful influence exerted by sex hormones, both normal and abnormal, on the development of the secondary sexual characteristics of the body. The symptoms are defeminization, masculinization, pain because of the pressure produced by a rapidly growing pelvic tumor, and blood changes (secondary anemia is usually present and an increase in eosinophils and monocytes has been noted). The temperature is frequently elevated. The Aschheim-Zondek test will differentiate pregnancy from arrhenoblastoma. The treatment is extirpation of the tumor, without disturbing the remaining pelvic organs, since only one ovary is affected and retention of the secretion of the other is essential to effect return to the normal feminine state. Prophylactic high voltage roentgen therapy is not indicated. In the event of recurrence, high voltage roentgen therapy should be of value because of the marked sensitivity of the germinal epithelium to destruction by radiation. As a rule, the arrhenoblastomas show marked cystic degeneration, so that often solid portions may be sparse. A number of cases of masculinizing tumors of the ovary, previously reported as sarcomas or multilocular cystadenomas, may fall into this classification after restudy. This is particularly true of the group in which the clinical signs of masculinization have not been prominent.

Radium Therapy in Treatment of Cancer.—Curtis treats the necrotic cervical growth with surgical diathermy or prophylactic radiation at least three weeks prior to operation. Pre-

liminary high voltage roentgen therapy may serve equally well in healing the sloughing cancerous surface. Under anesthesia, a preliminary pelvic examination is made to determine the extent of the growth and the amount of intervention required. Exposure of the cancer-bearing uterus and adjacent cellular tissues is then undertaken. With blunt dissection the bladder is mobilized upward, the cervix encircled with an incision as in making a radical vaginal hysterectomy, and the vaginal mucosa dissected laterally and posteriorly along natural lines of cleavage. With the organ half delivered broadside, vaginally, the bladder safely anchored in its elevated position with a catgut suture holding it high on the uterus and the paracervical tissues exposed, a massive radium treatment is possible. Radium needles or radon seeds are inserted near to or into the cervix or far from it, as indicated, with assurance of safety of the adjacent vulnerable organs. Although the ureters are subject to possible injury, they are considerably retracted, incident to the dissection and displacement of the bladder, and are relatively immune. Preliminary ureteral catheterization may merit consideration in selected cases. Injury of a uterine artery is a possibility; but the author has not yet seen that complication despite the many years that he has introduced radium needles into the cervical parametrium. Palpation of the artery preliminary to burying a radium needle in its vicinity appears unnecessary. After the radium needles or the radon has been buried, a chain tandem of radium capsules is inserted into the uterine canal in the usual manner. A vaginal pack completes the procedure. Until further experience warrants it, the total radiation should not exceed 3,500 millicuries. Even that amount may be excessive.

Treatment of Duodenal Fistula.—In two cases of duodenal fistula, Kittelson acidified and rendered the trypsin inactive by allowing tenth normal hydrochloric acid to run deep into the fistula by means of a catheter. The wound was then kept packed with gauze which contained within it a second catheter supplying the gauze with a buffer solution, according to the arrangement of Warshaw and Hoffman. Each catheter ran back to a container, one for the hydrochloric acid and one for the buffer solution. The buffer solution used was whole lactone milk and this proved satisfactory. It was prepared as follows: Whole milk was repasteurized, cultured with stock culture of *Bacillus acidophilus* and kept warm for six hours, when it was quite thick. It was then placed in the container and used as a buffer. The effect of the treatment was noticed immediately. The digestion of the tissues stopped at once and the pain ceased. The wound started to granulate. The loss of fluid diminished gradually. The toxemia, which had been increasing rapidly, seemed to have improved almost over night. The two fistulas healed in fourteen days and in three weeks, respectively. This treatment was supported by milk and egg enemas and by large amounts of fluid by the intravenous route as well as by hypodermoclysis.

Tennessee State Medical Assn. Journal, Nashville

26: 177-224 (May) 1933

- Responsibilities of the Physician to the Public. W. P. Wood, Knoxville.—p. 177.
 Office Treatment for Relief of Prostatic Obstruction: Preliminary Report of Cases. J. B. Neil, Knoxville.—p. 181.
 Present Status of Hormone Therapy in the Female. J. C. Ayres, Memphis.—p. 186.
 Surgical Treatment in Children. R. G. Waterhouse, Knoxville.—p. 190.
 Some Conditions Causing Hoarseness. F. S. LeTellier, Knoxville.—p. 197.
 Present Status of Tuberculosis Problem. J. B. Naive, Knoxville.—p. 200.
 Hay Fever and Asthma: Its Causes and Control. T. C. Crowell, Chattanooga.—p. 204.

Wisconsin Medical Journal, Madison

32: 281-356 (May) 1933

- Recent Trends in Medical Education. C. R. Bardeen, Madison.—p. 291.
 Congenital Hypertrophic Pyloric Stenosis. E. H. Spiegelberg, Boscobel.—p. 297.
 The Psychiatrist's Responsibility to the Public. A. I. Rosenberger, Milwaukee.—p. 300.
 Pulmonary Tuberculosis of Childhood. S. M. Welsh, La Crosse.—p. 308.
 Management of Orbital Cellulitis Secondary to Sinus Infection. J. B. Hitz, Milwaukee.—p. 318.
 Extradural Spinal Cord Tumor: Case Report. J. O. Dieterle, Milwaukee.—p. 322.
 Primary Torsion Omentum. W. J. Tucker, Ashland.—p. 323.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

14: 57-124 (April) 1933

- Effect of Subcutaneous Injections of Trypsin on Blood Sugar and on Insulin Action. Olive Burton Buckley.—p. 57.
Effect of Subcutaneous Injections of Trypsin on Respiratory Metabolism of Dog. Olive Burton Buckley and C. M. Wilhelmj.—p. 63.
*Relationship Between Viruses of Zoster and Varicella as Demonstrated by Complement Fixation Reaction. R. T. Brain.—p. 67.
Failure of Prolonged Administration of Iron to Cause Hemochromatosis. C. Polson.—p. 73.
Influence of Maltose on Growth and Toxin Production of Corynebacterium Diphtheriae. C. G. Pope and Margaret Healey.—p. 77.
Surface Growth and Toxin Production of Co.ynebacterium Diphtheriae. C. G. Pope and Margaret Healey.—p. 87.
Immunologic Studies with Phage-Coated Bacteria. F. M. Burnet.—p. 93.
Specific Soluble Substance from Bacteriophages. F. M. Burnet.—p. 100.
Studies on Clostridium Chauvoei: III. Passive Protection with Pure O Serums. D. W. Henderson.—p. 108.
A Vitamin Necessary for Growth of Bacillus Sporogenes: Its Relation to Auxin and Other Growth Factors. B. C. J. G. Knight and P. Fildes.—p. 112.

Viruses of Zoster and Varicella.—Brain used the complement fixation reaction as described by Bedson and Bland in observing the relationship between the viruses of zoster and varicella. The complement fixation reaction with zoster vesicle fluid and zoster and varicella convalescent serums shows specific fixation given by zoster and varicella serums with a zoster antigen, while a varicella antigen used in the place of a zoster antigen shows a similar test. Owing to the difficulty of obtaining samples of both zoster and varicella antigens at the same time, it was only occasionally that a double test with both antigens and serums could be put up. In this instance there was no hemolysis after thirty minutes at 37 C., and little or no hemolysis at a second reading after standing over night in the refrigerator. In accordance with these observations, the author concludes that the serum of persons convalescent from zoster and varicella contains specific antibodies, which can be demonstrated by complement fixation, the vesicle fluids being used as antigens. Zoster vesicle fluid gives equally good fixation in the presence of both zoster and varicella serums, and the same is true of varicella vesicle fluid. His observations are in conformity with those of Netter and his co-workers. They indicate the close relationship and possible identity of the viruses of zoster and varicella. The control serum that gave positive fixation with a zoster antigen was obtained from a woman of 25 who had had varicella in childhood.

British Journal of Radiology, London

6: 321-384 (June) 1933

- Measurements of High Voltage Roentgen Rays. W. V. Mayneord and J. E. Roberts.—p. 321.
Evolution of Roentgen-Ray Pelvimetry. A. Orley.—p. 345.
High Voltage Generators for X-Ray Apparatus. E. H. W. Banner.—p. 360.

British Medical Journal, London

1: 905-948 (May 27) 1933

- Cancer of the Stomach. R. P. Rowlands.—p. 905.
Treatment of Menstrual Irregularities. W. Shaw.—p. 907.
Primary Intrathoracic New Growth: Observations on Fifty Cases Examined Bronchoscopically. H. V. Morlock and A. J. S. Pinchin.—p. 911.
*Experiences with Proteose in Treatment of Diseases of Skin. N. Burgess.—p. 914.
*Calcium Thiosulphate in Treatment of Complications of Neosarsphenamine and Bismuth Administration in Syphilis: Preliminary Communication. A. E. W. McLachlan.—p. 916.
Monilia Infection of Respiratory Tract: Note. P. J. Maret.—p. 917.
Contraception, Some Practical Considerations: Note. C. I. B. Voeg.—p. 918.

Proteose in Diseases of Skin.—Burgess treated twenty-six patients suffering from various skin diseases with intradermal injections of urinary proteose. During the period of treatment, local application was limited to the use of sulphated bitumen zinc cream, or 2 per cent ammoniated mercury and salicylic acid in zinc paste. Of the five cases of psoriasis that were treated, one cleared up completely, while two cleared up temporarily but later relapsed. Another patient was suffering from psoriasis and rheumatoid arthritis; a positive reaction was obtained on intradermal injection of 0.05 cc. of a

1:100,000 solution of proteose. After six weekly injections of 0.05 cc. of a 1:10,000,000 solution there was considerable improvement in the psoriasis and in the arthritis. Following each injection there was some exacerbation of the joint pains within twenty-four hours; this patient is still under treatment. Another patient showed considerable improvement while undergoing the treatment, but although the eruption faded it did not entirely clear up. Of the eight cases of chronic eczema, five cleared up completely, one cleared up completely but relapsed in a few months, while two showed some improvement. Three of the eight patients presenting chronic urticaria were completely relieved. One patient, who suffered from daily attacks of urticaria for six years, now only gets a slight attack about once a month. One patient, who suffered from daily attacks of urticaria and angioneurotic edema for three and a half years, now suffers from a slight attack of urticaria about once a week. Another patient, who was referred for treatment because of chronic urticaria, had had no attack for eleven days. Intradermal injections of 0.05 cc. of a 1:1,000 solution of proteose were followed by a generalized attack of urticaria within ten minutes in three cases. The four cases of Besnier's prurigo were treated with proteose, but, although there was temporary improvement with diminution of irritation, there was little permanent change in the appearance of the eruption. A case of dermatitis herpetiformis cleared up after injections of a 1:10,000,000 solution of proteose and a relapse occurred, which cleared up with arsenic. When the patient was free from the eruption, a similar dose was given and was followed in twenty-four hours by another attack. From these results the author concludes that treatment with proteose prepared from the patient's urine gives satisfactory results in cases of chronic eczema and urticaria. Less striking results are obtained in cases of psoriasis and Besnier's prurigo, but benefit seems to be derived from the treatment in some cases. He found that 16 per cent of normal persons and 67 per cent of patients suffering from various skin diseases give positive reactions to their own proteoses. Slightly more proteose was excreted by the latter than by the former. All the patients relieved by this treatment gave positive skin reactions to their own proteoses before treatment, while, after treatment and cure, all those tested gave negative skin reactions.

Calcium Thiosulphate in Treatment of Syphilis.—McLachlan reports six cases of intolerance to neosarsphenamine or bismuth which have been treated with calcium thiosulphate. Apart from the feeling of intense heat in the skin, which came on during or immediately after the injection and persisted only a few moments, the intravenous injection of calcium thiosulphate has been uneventful. When it was possible, 0.6 Gm. was administered daily for three days; then biweekly injections were given. When sodium thiosulphate was given, the first injection was 0.6 Gm. and subsequent injections were 1 Gm. Calcium thiosulphate appeared to exert a definite curative influence in the author's six cases.

Edinburgh Medical Journal

40: 257-292 (May) 1933

- *Congenital Epulis. D. S. Middleton and W. F. Harvey.—p. 257.
*Epilepsy and Dehydration. D. M. Lyon and D. M. Dunlop.—p. 266.

Congenital Epulis.—Middleton and Harvey state that the tumor cells in congenital epulis do not exhibit a true epithelial mosaic arrangement and, in their case, show no organoid patterns. Blood vessels course throughout the tumor and form part of the tumor tissue, and this is not a feature of an epithelial structure but is truly mesodermic. The chief component cells have a marked resemblance to the cells found in other cell aggregates, in xanthoma and xanthelasma, of lutein cells and decidual cells, of phagocytic microglia and colostrum-like cells, which are acknowledged to be of mesodermic origin. Special stains bring out the fibrillar supporting framework of fine connective tissue of the tumor cells. These are facts which led the authors to a conclusion in favor of a mesodermic origin. They reject the view, therefore, that the tumor is of the nature of a new growth from, or a maldevelopment of, the enamel organ or any part of the gingival epithelium allied to that organ. That it may be of dental origin is not in any way excluded by this judgment; if it were of dental origin, it would be affiliated with the class of tumors arising from those elements

which constitute a dental papilla. That it arises from a mal-development of the musculature with degenerative changes appears improbable, and no evidence at all is forthcoming of neural origin. In concluding that this is a tumor of the xanthoma type, they recognize that their case is in itself ill defined in character; there is much indeed to be said for the view that it is some developmental anomaly of the dental papilla, and perhaps, as Schorr maintained, not a true neoplasm at all.

Epilepsy and Dehydration.—Lyon and Dunlop confirmed the production of major seizures by forced intake of fluid and inhibition of diuresis by solution of pituitary in epileptic adults. The administration of alkalis also causes an increase in the occurrence of fits, coincident with a rise in the alkali reserve of the blood. No abnormality in the acid base balance of the blood was demonstrable between fits in a series of twelve cases, but a definite acidosis occurred during the convulsion. The therapeutic effects of dehydration were observed in a small series of epileptic patients who were having seizures every day. During the periods of dehydration, definite beneficial effects were noted in four of the five patients observed. This improvement compared favorably with that produced by the ketogenic diet but was not as good as that produced by an adequate dose of phenobarbital. The effects of phenobarbital were, however, enhanced by maintaining a state of dehydration.

Irish Journal of Medical Science, Dublin

No. 90: 233-280 (June) 1933

- A Seventeenth Century Biochemist. J. D. H. Widdess.—p. 233.
Tuberculosis and the Celtic Myth. J. A. Musgrave.—p. 239.
Anxiety States. E. A. Bennett.—p. 252.
Acute Mastoiditis. R. R. Woods.—p. 258.

Lancet, London

1: 1053-1106 (May 20) 1933

- Human and Comparative Placentation, Including Early Stages of Human Development. O. Grosser.—p. 1053.
Menstruation and Menopause in Mental Disease. G. I. Strachan and I. Skottowe.—p. 1058.
Radiographic Findings in the Late Months of Pregnancy. D. M. Lindsay.—p. 1061.
*Immunization of Tuberculous Children Against Diphtheria with Formol Toxoid. H. J. Parish.—p. 1063.
Incidence of Laryngeal Cancer. J. Maxwell and J. C. Hogg.—p. 1064.
Congenital Atresia of Bile Ducts. A. G. Watkins and G. P. Wright.—p. 1066.

Immunization Against Diphtheria.—Parish immunized Schick-positive children suffering from surgical tuberculosis and other conditions against diphtheria. The Moloney test (intradermal diluted toxoid test) was used to detect children sensitive to toxoid. Delicate children were immunized with toxoid-antitoxin floccules irrespective of their Moloney response but all others received formol toxoid if Schick positive and Moloney negative, and toxoid-antitoxin floccules if Schick positive and Moloney positive. The usual course was three injections of 1 cc., given at intervals of two weeks. No troublesome local or general reactions occurred in any of the children. With formol toxoid, upward of 96 per cent were immune within two to four weeks after the third injection. The author states that the use of the Moloney test is imperative when it is proposed to inject tuberculous children with potent formol toxoid, as it is essential to avoid the febrile reactions that may follow the use of toxoid.

Medical Journal of Australia, Sydney

1: 669-696 (June 3) 1933

- Benign and Malignant Conditions of Cervix Uteri. R. F. Matters.—p. 669.
Effect of Molybdenum Impurity in Arsenophosphotungstic Acid Reagent on Uric Acid Content of Blood. Vera I. Krieger.—p. 677.
Development of Technic in Treatment of Cancer of Cervix Uteri. J. Blewett and M. B. Johnson.—p. 683.

Practitioner, London

130: 521-624 (May) 1933

- Evolution of Endocrine Treatment. H. Rolleston.—p. 521.
Endocrinology of Male Gonads. K. Walker.—p. 525.
Recent Advances in Female Sexual Physiology, with Suggestions Regarding Their Possible Therapeutic Value. W. F. T. Haultain.—p. 534.
Nonspecific Protein Therapy. G. W. Bray.—p. 545.
Bad Surgical Risks. A. B. Rooke.—p. 564.
Value of Ligat's Reflex in Abdominal Diagnosis. A. C. Sharp.—p. 576.
Diphtheria Immunization in Infancy. J. G. Forbes.—p. 587.
Present Position of Manipulative Surgery. P. Wiles.—p. 594.

Revue Francaise d'Endocrinologie, Paris

11: 161-244 (June) 1933

- Melanophorodilator Substance in Urine in Certain Diseases: Test of Hypophyseal Function. R. Collin and P.-L. Drouet.—p. 161.
Acromegaly with Calcium Diabetes Followed by Diabetes Mellitus Treated with X-Rays: Case. L. Langeron, R. Desplats, M. Paget and A. Danes.—p. 177.
*New Conception of Pathogenesis of Arteriosclerosis: Genital Glandular Deficiency. C. Doljan.—p. 192.

Pathogenesis of Arteriosclerosis.—Doljan thinks that arteriosclerosis is not the cause but the result of hypertension and that this hypertension is due to endocrine changes associated with the decline of the natural genital functions. There are two antagonistic groups of glands in the individual: the genital vasodilator group, comprising the ovary and perhaps the gland of Bartholin in women and the testis and prostate in men and the anterior lobe of the hypophysis in both sexes, and the vasoconstrictor group comprising the suprarenals and the posterior lobe of the hypophysis. The action of these two groups is coordinated by the thyroid. Normally the vasodilator effect of the first group is offset by the vasoconstrictor effect of the second group, and the vagosympathetic equilibrium is maintained. At the climacteric (feminine or masculine), the equilibrium is destroyed because of the disappearance or decrease of the hormones of the genital glands. Accordingly, the vasoconstrictor glands gain a progressive supremacy. The tonus of the sympathetic increases the capillary spasm, the normal osmosis through the vascular walls is impeded, and the nutritive and eliminating functions of the blood are disturbed. The vascular endothelium is subjected to constantly increasing friction. The hypertension, which was moderate, oscillating and purely functional at first, becomes permanent, resulting in vascular lesions and the development of common arteriosclerosis.

Archiv für Kinderheilkunde, Stuttgart

100: 1-64 (July 18) 1933

- Action of Apple Diet on Nitrogen and Mineral Metabolism. H. Hütker.—p. 2.
Studies on Cerebrospinal Fluid in Acute Anterior Poliomyelitis. L. von Kostyal.—p. 15.
Roentgen Therapy of Feeble-mindedness in Children. J. Jochims.—p. 27.
Still's Disease Complicated by Paratyphoid. Therese Berzacy.—p. 32.
Aspects of Gonorrhea in Children. L. von Dobszay.—p. 37.

Beiträge zur Klinik der Tuberkulose, Berlin

83: 1-120 (June 24) 1933

- *Pneumoperitoneum as Therapeutic Method in Intestinal Tuberculosis. R. Klopstock and W. Schüler.—p. 1.
Origin of Auscultation Manifestations on Healthy and Tuberculous Pulmonary Tissue in Formation of Vowels. H. von Putkovsky.—p. 10.
Rare Pulmonary Anomaly in the New-Born Child of a Tuberculous Mother with Pneumothorax. J. Kuszewitzky.—p. 27.
Arrest of Growth of Tubercle Bacilli by Metabolic Products. L. M. Model, I. P. Gurjewa and A. M. Pirogowa.—p. 29.
Perifocal Erythrocyte Sedimentation Reaction. M. M. Altschuler.—p. 35.
Culture Medium of Especial Suitability for First Culture of Bovine Tubercle Bacillus; Also Contribution to Cultural Type Determination. O. Kirchner.—p. 39.
Complement Binding Antibodies in Tuberculosis. H. Fernbach and M. Weichsel.—p. 44.
Observations on Diaphragmatic Activity Before Roentgen Screen. R. Menzel.—p. 50.
Thoracoplasty in Bilateral Pulmonary Tuberculosis. H. Jessen.—p. 61.
Therapeutic Experiments with Gold Preparations. S. Markovits and B. Berki.—p. 85.
Iodine Resorption in Oleothorax with Iodized Sesame Oil. G. von Haffner.—p. 92.
Infiltration in Relations Between Influenza and Pulmonary Tuberculosis. A. Held.—p. 97.
Tubercle Bacilli Demonstration in Diagnostic Practice. A. Kairies.—p. 112.
Rare Complication Following Endopleural Caustic. G. Zimmermann.—p. 117.

Pneumoperitoneum in Treatment of Intestinal Tuberculosis.—In twenty-one patients with intestinal tuberculosis, in whom the symptoms were quite severe and almost completely refractory to treatment, Klopstock and Schüler produced favorable results with pneumoperitoneum. They introduced air rather than oxygen, for they believed that the type of gas is of no importance for the success of the treatment. At the first filling they generally introduced from 400 to 600 cc. of air, and at the subsequent fillings from 400 to 800 cc. They advise that attention must be given to the statements of the patient about the feeling of pressure, particularly during the first few administrations. At the beginning of the treatment the intervals between injections may have to be reduced to five days, but as a rule

the fillings are made every week. In two of the patients treated, in whom the peritoneum had already been maintained for four and six months, respectively, the intervals were lengthened to ten days, while the quantity of air was increased to from 800 to 1,000 cc. In puncturing the abdominal cavity, care has to be taken that the epigastric artery and the intestine are not injured. The cannula is introduced at the left side of the abdomen, three fingerbreadths beneath the umbilicus and the same distance from the linea alba. Some patients have at first slight drawing pains along the attachment of the diaphragm, and these pains occasionally radiate to the shoulders; but the authors never observed serious complications from pneumoperitoneum treatment. The result of the treatment was that the abdominal pains and vomiting disappeared in all the patients and diarrhea in the majority, and that in some the bowel movements could be reduced to two a day. In one patient with prognostically favorable pulmonary tuberculosis and with severe intestinal tuberculosis, the pneumoperitoneum effected a considerable improvement in the general condition, so that an extensive intestinal resection became possible, after which the pulmonary condition likewise improved. In this patient the pneumoperitoneum has now existed for fifteen months. Eleven of the patients who were treated with the pneumoperitoneum died as the result of pulmonary and intestinal tuberculosis, but the fact that the patients can be freed from their extreme suffering makes pneumoperitoneum a valuable treatment.

Chirurg, Berlin

5: 569-608 (Aug. 1) 1933

- The Flat Necrotic Vertebra. W. Löhr.—p. 569.
*Recognition and Treatment of Renal Carbuncle. Dr. Hohlbaum.—p. 574.
Attempts at Killing of Resistant Microbes by Steam Sterilization at 120 C. G. Schoop.—p. 577.
Roentgenographic Presentation of Epiphyses. M. Böhm.—p. 580.
Full Time Worker with Bodily Trauma. E. R. Heydemann.—p. 583.
Cancer of the Breast and Pregnancy. W. Wachsmuth.—p. 585.

Recognition and Treatment of Renal Carbuncle.—Renal carbuncle is a hematogenic metastasis into the cortex or the medulla of the kidney. The original focus is a furuncle, a carbuncle or tonsillitis. The signs and symptoms of a renal carbuncle may be so meager as to make the diagnosis difficult. It is, in fact, rarely diagnosed before operation. What is misleading in diagnosis is the frequent absence of local tenderness and of any urinary signs or loss of renal function. A sudden onset with pain and fever in a young person and a history of a preceding suppurative infection are suggestive. Pain on the affected side and fever may be the only symptoms for some time. The course of the disease is characterized by relatively little tendency to suppuration, by tumor-like expansion of the lesion, and by the tendency to perforate more often into the fatty renal capsule than into the calices. Hohlbaum considers the appearance of the renal pelvis in a pyelogram quite characteristic. It resembles that seen in tumor of the kidney, especially in hypernephroma. The calices are either compressed or widely separated. Such an appearance, in the presence of an acute onset with pain and fever and in the absence of the usual signs of kidney infection, justifies the diagnosis of carbuncle of the kidney. Treatment consists of incision of the carbuncle with drainage, excision of the carbuncle with drainage, or nephrectomy. The latter should be performed only in advanced stages with loss of renal function, or in the presence of chills suggesting venous thrombosis and the possibility of a general septicemia.

Deutsche medizinische Wochenschrift, Leipzig

59: 1115-1154 (July 21) 1933

- Indications for Artificial Abortion. H. Martius.—p. 1115.
Investigations on Helminthiasis of Human Beings on Curisches Haff. R. Wigand and F. Steiner.—p. 1119.
Circulation and Nervous System. F. Kauffmann.—p. 1121.
Blood Sugar Reducing Action of Mineral Water "Fachingen." H. J. Jusatz.—p. 1124.
*Internal Treatment of Psoriasis. E. Körner.—p. 1125.
Beginning of Pulmonary Tuberculosis. W. Curschmann.—p. 1127.
Influenza Prophylaxis. Anna Oetiker.—p. 1131.
Copper Treatment of Anemia. M. Henius.—p. 1131.
Treatment of Itching and of Hypersusceptibility of Skin. C. Bruck.—p. 1132.

Internal Treatment of Psoriasis.—Körner calls attention to an arsenic treatment of psoriasis that was first recommended by Gebeert in 1931. It consists in the simultaneous use of solu-

tion of potassium arsenite and of Asiatic pills. These medications have been employed previously in psoriasis, but their simultaneous application makes it possible to administer larger amounts of arsenic. Solution of potassium arsenite is given, beginning with 5 drops three times a day of a prescription consisting of 10 parts of solution of potassium arsenite and 20 parts of tincture of ferrated extract of apple, and increasing this dosage by three times 1 drop daily up to a total of three times 25 drops daily. In addition to this the patient is given three times daily one Asiatic pill (arsenic trioxide 0.5, black pepper 5.0, acacia 1.0 and distilled water to make 100 pills). The amounts of arsenic administered in this manner are large, but it is known that for skin diseases large doses are not only permissible but necessary. However, since arsenic does not agree equally well with all persons, the treatment requires individualization. The author does not recommend this form of arsenic treatment indiscriminately for all cases of psoriasis but advises it particularly for patients in whom the psoriasis covers large areas and in whom it is usually chronic or recurring. He points out that dietary treatment may prove helpful as an adjuvant to the arsenic treatment. The sodium chloride, meat and protein intake should be restricted, and fruits and vegetables should be provided in large quantities. The local application of oil or of indifferent ointments may reduce the feeling of tension.

Deutsche Zeitschrift für Chirurgie, Berlin

241: 1-128 (July 22) 1933

- Loss of Sensory and Motor Function in Lumbar Anesthesia. C. M. Janson.—p. 1.
*Clinical and Experimental Studies of Goiter Problem and of Exophthalmic Goiter. E. Schneider and E. Widmann.—p. 15.
Results with Surgical Treatment of Pylorospasm in Nurslings. Nissen and P. Boecker.—p. 34.
Rôle of Pylorus in Development of Postoperative Peptic Ulcer. L. Zukschwerdt and E. Becker.—p. 39.
*Rôle of Gastritis After Resection for Ulcer. L. Zukschwerdt and H. Zettel.—p. 55.
Cholangiography During Operation in Residual Complaints After Cholecystectomy. P. L. Mirizzi.—p. 68.
Posttraumatic Functional Renal Hemorrhage. E. R. W. Frank and R. Jaffé.—p. 74.
*Experimental Attempts to Enlarge the Urinary Bladder by Inclusion of Piece of Intestine. H. Viethen.—p. 84.
Priapism in Primary and in Metastatic Tumors of Corpus Cavernosum of Penis. H. Niewiesch.—p. 94.
Tumors of Breast in Man. H. Angerer.—p. 104.
Experiments with Boric Acid and Vasoform Powder as Hand Disinfectants. E. Westmeier.—p. 111.
Ileocecal Invagination After Appendectomy. G. Schaaff.—p. 121.
Gastro-Enterostomy in Situs Viscerum Inversus Totalis. I. I. Genkin.—p. 124.
Contribution to Subject of Lateral Hernias. T. Reeke.—p. 126.

Exophthalmic Goiter.—Schneider and Widmann, in the present study, found that liver damage of thyrogenous origin was characterized by diminution in glycogen content, a sign of an increase in the rate of breaking up of carbohydrates. In contradistinction to toxic liver damage, it was not accompanied by fatty infiltration, so that the law of isodynamic substitution did not hold true in this instance. Toxic liver damage in ileus is characterized by changes in the concentration of blood ions with a resulting hypochloremia and hypocalcemia, while the sodium ions remain undisturbed. In the thyrogenous liver damage there is, to the contrary, a lowering of sodium ions, while chlorine and calcium ions remain unaltered. The authors subjected certain preoperative methods to a critical study by first producing an experimental state of exophthalmic goiter by means of hormone influences, controlling the picture by histologic studies, by determination of blood ions, especially of sodium and chlorine ions, and by determination of glycogen and fatty acids as well as of mineral salts in the liver and muscles. The generally favorable clinical experiences with iodine as a preoperative measure were confirmed by experiment. The disturbed action of the thyroid gland, resulting from the administration of the thyrotropic hormone, and the consequent liver damage were almost completely controlled by proper doses of iodine in a ten day experiment. Plummer's method was able to prevent the development of experimental exophthalmic goiter. Diiodotyrosin influenced the histologic picture but did not prevent liver damage. The authors consider it much inferior to iodine. Casein is desirable and is easily administered in the form of curds, but it has little influence as a preoperative measure.

Gastritis After Resection for Ulcer.—Zukschwerdt and Zettel made a histologic study of sixty-six resected stomachs. They found a pronounced gastritis in every case. Forty-four of the patients were subjected to a clinical and roentgenologic follow-up study. In many cases the gastritis could be diagnosed from roentgen studies. The patients, however, presented as a rule no complaints. The fact that complaints may be present or absent while the anatomic picture is the same suggests the importance of psychic elements. The indication for a gastric resection in a neurotic ulcer bearer calls for much care. While gastritis can undoubtedly produce symptoms, the authors feel that it will eventually, as in the case of adhesions, be consigned to the fate of a passing fashion.

Klinische Wochenschrift, Berlin

12: 1041-1080 (July 8) 1933. Partial Index

- Present Status and Problems of Eugenics. K. Saller.—p. 1041.
Action of Cancerogenic Tars on Ovation and on Offspring of Chickens (Development of Malignant Tumors in Second Generation). B. Bloch and H. Stauffer.—p. 1044.
*Investigations on Hypersusceptibility to Egg White, Cow's Milk and Wheat Flour in Children with Eczema. Erna Zitzke.—p. 1047.
*New Immunity Reaction for Tuberculosis. H. Nagell.—p. 1048.
Tumor and Incretory System. M. Reiss, H. Druckrey and A. Hochwald.—p. 1049.
Variability of Saprophytic Bacteria. H. Grossmann.—p. 1050.
Diagnosis of Metasyphilis by Means of Demonstration of Cerebral Antibodies. R. Foerster.—p. 1052.
Clinical Aspects and Pathologic Anatomy of Chronic Insulin Poisoning of Animals. L. Dünner, B. Ostertag and S. Thannhauser.—p. 1054.
Remarks on Case of "Hypochloremic Uremia." B. W. Ercklentz.—p. 1058.
Problem of So-Called Muscular Tears. H. Deutsch.—p. 1059.

Hypersusceptibility in Children with Eczema.—Zitzke investigated the causal relations of eczema in children to food proteins. Following a review of the literature she describes the cutaneous tests she performed on forty children with eczema and on eighty-four without eczema. Of thirty-one eczematous children, aged from 6 months to 4 years, twelve gave a positive reaction to egg white, three to cow's milk and one to wheat flour. In nine eczematous children, aged between 4 and 14, the egg white and wheat flour tests were always negative and the cow's milk test was only once positive. Control tests on eighty-four children without eczema were all negative. Passive transmission according to Prausnitz-Küstner was possible in three cases. The examination of sixteen serums for the presence of complement fixation antibodies was always negative. The author considers it improbable that the susceptibility to protein is the only specific cause of eczema in infants, because, if for instance the egg white susceptibility was the cause of an eczema, its removal from the diet ought to be followed by an improvement in the eczematous manifestations. This, however, could not be observed. Dietary treatment alone does not cure eczema but has to be combined with local medicinal treatment. A direct etiologic connection between the reactive substances and eczema has not been definitely proved as yet, and the author thinks that the positive reactions are of a non-specific character which merely indicate an increased reactivity of the skin.

New Immunity Reaction for Tuberculosis.—The adaptation of the Meinicke clarification test as an immunity test for diseases such as glanders of horses, *Alcaligenes abortus* infections in human beings and gonorrhea, and the favorable results obtained by Witebsky, Klingenstein and Kuhn with their new tubercle bacillus antigen induced Nagell to adapt the Meinicke clarification test with the aid of the aforementioned antigen as an immunity test for tuberculosis. He employed Meinicke's original solution and the antigen prescribed by Witebsky and his co-workers and he performed the test on 556 serums, 101 of which were from patients with pulmonary tuberculosis. Of sixty-four serums from patients with open tuberculosis, forty-one gave a positive reaction, nineteen a negative reaction and four a doubtful one. Of twenty-nine serums from patients with closed tuberculosis, thirteen reactions were positive, fourteen negative and two doubtful. Of the eight serums of patients with tuberculous processes of the hilus, three reacted positively and five negatively. One case each of tuberculosis of the bones, the kidneys, and the peritoneum gave negative reactions, and one case with indurations of the pleura gave a positive reaction. Of three patients in whom tuberculosis was suspected, two gave a positive reac-

tion and one a negative reaction. The test was also made on serums of 448 persons who did not have tuberculosis. Of these 403 gave negative reactions, 32 positive ones and 13 doubtful ones. A tabular report comparing the tuberculosis immunity test with the complement fixation test reveals that there is no essential difference between the two tests. Since the tuberculosis immunity test requires less laboratory material and has a much simpler technic than the complement fixation test, the author suggests that there is a possibility of replacing the complement fixation test by the immunity test.

Münchener medizinische Wochenschrift, Munich

80: 1035-1076 (July 7) 1933

- Nonmedical Treatment of Cardiac and Vascular Diseases. L. Roembeld.—p. 1035.
Relation of Iodine to Goiter. J. F. McClendon.—p. 1039.
*Inadvisability of Massage and Passive Movements in New Injuries of Bones and Joints. L. Böhler.—p. 1040.
*Displacement of Gastro-Intestinal Tract Following Phrenic Exeresis on Left Side. R. Noack.—p. 1042.
Late Gonorrheal Arthritis. E. Schrader and A. Faber.—p. 1043.
Diagnosis of Late Gonorrheal Arthritis. F. Wirz.—p. 1045.
Treatment of Muscular Rheumatism and of Related Disorders. Eleonore von Balden.—p. 1046.
Bier's Method of Ether Therapy of Bronchitis: Modification. F. Révész.—p. 1047.
Relations of Pulmonary Tuberculosis to Other Disturbances of Respiratory Organs, with Especial Consideration of Occupational Disturbances. Hochstetter.—p. 1047.
*Modification of Poorly Healing Fractures by Protein-Free Extract from Germinal Tissues of Bone. W. Hoffmeister.—p. 1055.
Simplification of Examination of Biliary Tract. F. Diehl and F. Kuhlmann.—p. 1058.
Regulations Regarding Marketing of Milk. L. Schaetz.—p. 1058.

Inadvisability of Massage in New Injuries of Bones.—Böhler considers massage and passive movements in new bone fractures and articular injuries a grave mistake. He maintains that, if a fractured joint is properly reduced and constantly kept in a suitable position until solidification, and if during this time the fractured member is used by the patient, a freely movable joint is usually the result; but, if massage and passive movements are instituted on the first day, the joint becomes stiff or loose.

Displacement of Gastro-Intestinal Tract Following Phrenic Exeresis.—Noack observed in a number of patients that phrenic exeresis on the left side is followed by severe gastro-intestinal disturbances, such as constipation, severe gas pains, a feeling of fullness while eating, nausea when an attempt is made to complete the meal, and frequent eructation and vomiting. He made roentgenologic studies of these patients and discovered that the paralyzed diaphragm causes considerable displacements in the gastro-intestinal tract. He points out that the disturbances caused thereby retard the healing process of the tuberculosis or make recovery impossible, because the deficient nutrition resulting from these disorders must have a deleterious effect on a destructive disease like tuberculosis, and thus the exeresis done to improve the tuberculosis may do more harm than good.

Influence of Bone Extract on Healing of Fractures.—Hoffmeister points out that drugs as well as tissue extracts have been recommended for poorly healing fractures and for pseudo-arthroses. He mentions various bone extracts that have been tried by other investigators and then states that, in collaboration with Rothenheim and Teichmann, he has prepared a protein-free extract from the epiphyseal tissues of the bones of growing animals, and that he has used it in a large number of fractures in the last two years. He injects once every week from 1 to 2 cc. of the extract into the cleft of the fracture and under the periosteum, whenever the formation of callus is retarded or when a pseudo-arthritis has developed. The number of injections is determined by the progress in healing. The author asserts that he obtained favorable results with this extract, but he advises that it should not be used until eight or ten weeks has passed since the fracture occurred, because in new fractures it seems to retard rather than accelerate the healing process. It is mainly effective in old fractures in which the new formation of bone has ceased and needs stimulation. In discussing the action mechanism of the extract the author expresses the opinion that it stimulates the cells of the periosteum and of the endosteum.

Wiener klinische Wochenschrift, Vienna

46: 897-928 (July 21) 1933

- *Myxedema in Children. E. Nobel and R. Ronald.—p. 897.
Sociological Aspects of Gonorrhea in Vienna: Investigations on Sources of Infection, Significance of Prostitution, Hospitalization of Women with Gonorrhea, Prophylaxis. A. Fessler.—p. 903.
Metabolic Hormone of Anterior Lobe of Hypophysis. H. Magistris.—p. 908.
Diagnostic Errors in Sacral Dermoid. D. Eisenklam.—p. 913.
New Hemometer. E. Ternigg.—p. 914.
Differential Diagnosis and Therapy in Diarrheal Disturbances. E. Lauda.—p. 914.
Dietary Treatment in Obesity. H. Elias.—p. 920.
What Psychoses are Most Frequent During Puberty and How Are They to Be Treated? A. Pilez.—p. 921.

Myxedema in Children.—Nobel and Ronald point out that some authors do not yet distinguish between myxedema and mongolian idiocy and that others fail to differentiate cretinism and myxedema. A correct differentiation, however, is important in order to obtain satisfactory therapeutic results. They discuss particularly those forms of myxedema that become manifest during early childhood and are perhaps congenital. In giving their attention to the treatment of myxedema by thyroid extracts it was their aim to determine the efficacy and the rational dosage of these extracts. The physical development of the children was determined by regular measurements and by weighing. Attention was given to nutrition, pulsation, temperature, development of the centers of ossification of the carpal bones, basal metabolism and other metabolic problems, water economy and cardiac function. The authors state that the thyroid treatment has to be continued for years, and they assert that with the dosage which they adopted there never developed thyrotoxic manifestations. In discussing the psychic development of the children with myxedema, the authors find that psychic improvement does not always run parallel with somatic improvement and that organ therapy alone does not suffice to effect psychic improvement, but that a correct pedagogic method is of the greatest significance.

Zentralblatt für Gynäkologie, Leipzig

57: 1633-1680 (July 15) 1933

- Pregnancy and Rupture of Aorta. H. Uebermuth.—p. 1633.
*Pelvic Hematoma as Sequel of Rupture of Cervix Following Dilation. G. Ahlthorp.—p. 1645.
Results of Exclusive Radium Treatment in Carcinoma of Female Genitalia. Y. Jkeda and K. Jkeda.—p. 1651.
*Gymnastics During Pregnancy. H. Sieber.—p. 1656.
*Has Maternity Before Age of 17 Serious Disadvantages for Mother and Child? K. Wepschek.—p. 1660.
Metranoliter as Dilation Instrument. O. Köster.—p. 1664.

Pelvic Hematoma as Sequel of Rupture of Cervix.—Ahlthorp describes a case of pelvic hematoma resulting from a rupture of the cervix (injury of the uterine artery), caused by dilation with Hegar's dilators up to number 8. The woman was 59 years old. During the dilation and the subsequent curettage nothing abnormal was noticed, but sometime after the operation pains in the lower part of the abdomen and a subfebrile temperature developed. Then an area of greater resistance was detected in the pelvis, and laparotomy revealed a subperitoneal hematoma containing 600 cc. of coagulated blood. The patient recovered following evacuation of the hematoma. After discussing the unusual aspects of this case, the author points out that, among the many reports about instrumental injuries of the uterus, there are hardly any cases of cervical rupture following dilation.

Gymnastics During Pregnancy.—Sieber relates the histories of four women who did gymnastic exercises during gestation, with a favorable influence noticeable. All had been pregnant once or twice before, and during these previous pregnancies the only form of exercise had been long walks. It was noted that under the influence of the gymnastic exercises the disorders that had been observed during former pregnancies did not reappear. The women felt exceptionally well throughout the pregnancy, the delivery was easier and the recovery during the puerperal period was more rapid than formerly. The author reviews the recent literature on this subject and finds that the number of those who are opposed to gymnastics during pregnancy has considerably decreased.

Has Maternity Before Age of 17 Serious Disadvantages?—Wepschek was induced to study this problem because of a bill which proposes to legalize abortion in Czechoslovakia

for girls who become pregnant before the age of 16. He compared the delivery records of ninety-six primiparas below the age of 17 with those of ninety-six primiparas between the ages of 20 and 24. He found that the first group did not compare unfavorably with the second group but that in some respects, particularly in regard to puerperal morbidity, conditions were more favorable for them than for the older group of primiparas. Premature births were somewhat more frequent in the younger group; namely, forty-seven compared to thirty-nine in the other group. Four of the forty-seven infants died of debility soon after delivery. The number of infants of subnormal weight likewise was greater among those of the younger primiparas, but abnormal weight curves were more frequent among the infants of the older mothers than of the younger mothers, so that it can be said that the life expectancy of children of extremely young mothers, in spite of a high incidence of premature births and of subnormal weight, is not less than that of the children of primiparas between 20 and 24, and that at least there is no reason to talk of "physical inferiority," as is done in the draft of the law. The author thinks that there is no necessity for the legalization of abortion in girls under 16, particularly in view of the possibility that the legalization may impair the health and morality of the young girls to the detriment of society.

57: 1681-1744 (July 22) 1933

- Clinical Differentiation of Matrix Regions of Carcinoma. H. Hinselman.—p. 1682.
*New Rheumatism and Gynecology: Nervous Rheumatism and Women's Dress. R. Milner.—p. 1687.
Anatomy and Physiology of Intestine During Gravidity. G. Albano.—p. 1698.
Technic of Sturmdorf's Plastic Operation on Uterine Cervix. O. Köster.—p. 1698.
Cerebral Hemorrhages During Puerperium. A. Nikolajew.—p. 1701.

Nervous Rheumatism and Women's Dress.—Following remarks about the changing significance of the term rheumatism, Milner directs attention to rheumatic neuritis. He asserts that this form of nervous rheumatism is particularly frequent in women and girls and that it is due to modern tendencies in women's dress. He thinks that rheumatic pains in the feet and in the legs, frequently ascribed to weakening arches, are often caused by exposure due to insufficient covering of the feet and legs. He considers the sleeveless mode and the insufficient covering of the chest the cause of many rheumatic pains in the shoulder joints, the arms and the hands, and of thoracic pains, resulting from intercostal rheumatic neuritis, that are sometimes erroneously ascribed to pleurisy, pulmonary tuberculosis or cardiac disorders. Rheumatic neuritis in the region of the abdomen may simulate disease of the gallbladder, the stomach, the appendix, the kidneys or the bladder. The rheumatic character of the pains is proved by the dependence on weather conditions and by the absence of sequelae of internal disorders. Of especial importance for the gynecologist is the fact that endocrine disturbances, particularly those of the ovaries, the thyroid and the hypophysis, are frequently concerned in the pathogenesis of rheumatism. The author considers nervous rheumatism and especially its main cause, unsuitable clothing, responsible for the increase in thrombosis and embolism. He maintains that most fatal embolisms originate in the legs rather than in the heart.

Klinicheskaya Meditsina, Moscow

11: 527-630 (No. 11-12) 1933

- Theory and Mechanism of Action of Histolysates. M. P. Tushnov.—p. 527.
*Angina Pectoris. D. D. Pletnev.—p. 533.
Operation of Thoracocautic After Jacobeus. E. Bubnova-Kandelaki.—p. 541.
Problem of Lysates. S. M. Pavlenko and V. S. Kiselev.—p. 545.
Regarding Lysates. V. A. Gereshevskiy.—p. 551.
Early Practical Application of Tushnov's Teal F. Borodulin, I. Dombé and L. Eruz.—p. 555.
Chemical Fate of Hormones in Living Organism. O. A. Stepnun.—p. 577.
Mechanism of Action of Hydrolysates. I. N. Kazakov.—p. 581.
Effect of Lysates on Living Animal. A. V. Rummyantsev.—p. 600.
Early Recognition of Pulmonary Tuberculosis. V. L. Eynis.—p. 612.
Course of Siberian Plague: Its Specific Vaccine Treatment According to Data of Botkin Hospital. K. M. Onosova.—p. 620.

Angina Pectoris.—Pletnev views the pain of an attack of angina pectoris as a psychic experience on the part of the patient. The two essential features of the syndrome are pain

and death. The anatomic factor, as seen in the changes in the coronary arteries and in the intracardiac nervous elements, cannot be regarded as the determining factor in the causation of an attack of angina pectoris. The anatomic changes, however, are of prognostic importance. They tell the story of the outcome of a single attack and the degree of restitution of cardiac dynamics. The pathogenesis of angina pectoris is variable. In some cases it is associated with arterial spasm, in others with a muscle cramp. The author distinguishes two forms of angina pectoris: the intracardiac and the extracardiac. The intracardiac form is either a coronaralgia or aortalgia and the pain develops in the heart and radiates in a centrifugal direction. In the extracardiac variety, the source of pain is outside the heart. The genesis of this pain was demonstrated in human beings by Leriche, Pletnev and Khesin, and others. The possibility of a centripetal mechanism in the direction of the ganglions and the further conduction of irritation toward the heart is an admissible hypothesis because of an analogy to experiment. The mechanism of death is a twofold one. In some instances, it is due to an acute ischemia of the heart, the result of an occlusion or spasm of a large or medium sized branch of the coronary artery; in others, it is the result of ventricular fibrillation.

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73: 1-218 (July 28) 1933

Intra-Articular Fractures of Proximal End of Tibia. O. Mikkelsen.—p. 1.

Resection of Cardiac Portion of Esophagus for Cancer; Esophagogastric Anastomosis. R. Ingebrigtsen.—p. 43.

Subcutaneous Rupture of Diaphragm: Case. G. Gezelius.—p. 47.

Rigid Great Toe and Its Treatment. J. P. Strömbeck.—p. 53.

*Experimental Contribution to the Knowledge of Intestinal Peristalsis Gained from Observation Through an Abdominal Window in Rabbits. E. Schnorr.—p. 84.

*Clinical Study of Causation of Pseudarthrosis of Diaphyses of Long Bones of Extremities. A. Hellstadius.—p. 111.

Two Less Common Renal Disorders. E. Edberg.—p. 161.

Two Cases of Intermittent Hydrops of the Knees. K. A. Lovén.—p. 181.

Clinical Significance of Diastasia: IV. Significance of Diastatic Power of Urine in Differential Diagnosis of Various Forms of Icterus. J. Foged.—p. 203.

Experimental Studies on Intestinal Peristalsis.—Schnorr presents a study of the effect on the intestinal peristalsis of intravenous injection of a hypertonic solution of sodium chloride. After a brief survey of the more important methods, the author describes his own modification of the Katsch-Borscher method of observing intestinal movements through a window in the abdominal wall. The method consists in suturing into the abdominal wall of a rabbit an oval cellophane plate 0.5 mm. thick and 8 by 6 cm. in size. The author observed that the bowel was parietic during the operation under ether anesthesia. Cooling of the bowel by leaving the window uncovered caused cessation of peristalsis. Warming the abdominal wall with an electric lamp brought the return of normal movements. Paresis of peristalsis was caused by injection of atropine and by intraspinal anesthesia involving the posterior portion of the body. Anoxemia or increased carbon dioxide tension of the blood caused a violent contraction of the arteries of the intestine with a simultaneous cessation of all movements. At the same time the arteries of the skin were seen to contract and the veins of the ear to dilate. Injections of solution of pituitary caused abnormally violent contraction of uncoordinated unphysiologic type and of short duration. Injections of hypertonic (7 to 25 per cent) solution of sodium chloride intravenously or into the heart caused peristalsis in a paralyzed bowel. The peristalsis was of a normal type and of long duration. Intravenous injection of hypertonic solution of sodium chloride had a pronounced diuretic effect, as well as the effect of accelerating the absorption of peritoneal transudates.

Pseudarthrosis of Diaphyses of the Long Bones.—Hellstadius presents a clinical study of seventy patients with pseudarthrosis of the diaphyses of the long bones of the extremities in an effort to evaluate the various factors present. The author noted that in instances of multiple fractures pseudarthrosis resulted in several of these, suggesting a general predisposition to insufficient callus formation. He found no evidence that a relative deficiency in vitamin C was concerned in the production of pseudarthrosis. The tendency to pseudarthrosis in children is slight as compared with that of adults. A statistical study of the localization of pseudarthrosis suggests the impor-

tance of the rôle of the arterial blood supply of the shaft. In the author's material, nonunion occurred most frequently after comminuted fractures, next after transverse fractures and in only a few cases after oblique or spiral fractures. Pseudarthrosis occurred in 7 per cent of compound fractures, in 2.4 per cent of simple fractures treated by operation, and in only 0.23 per cent of simple fractures reduced manually. Hematoma at the site of fracture appears of some importance in callus formation, probably by increasing the hyperemia. Fractures treated by inlay graft frequently resulted in pseudarthrosis, both when ivory pegs or bone grafts were used. Fractures operated on during the first three days after the accident have shown a particularly great number of failures of bony union when compared with those operated on at a later stage. This may be due to the removal of the hematoma and the prevention of the development of hyperemia at the seat of fracture. The majority developed after fractures caused by direct violence, suggesting that laceration of the soft parts played an important part. Incomplete immobilization appeared to be a factor only in the later stages of delayed bony union.

Hospitaltidende, Copenhagen

76: 713-740 (June 22) 1933

*Hypoglycemic Symptoms in Diabetes: Effect of Intravenous Injection of Insulin. VI. K. Roholm and T. E. Hess Thaysen.—p. 713.

Clinical Experiences with Friedmann-Schneider Pregnancy Reaction: Preliminary Report. S. Felding and I. C. Neergaard.—p. 729.

Investigations on Perception of Smell After Intravenous Injections. H. Lindenov.—p. 734.

Hypoglycemic Symptoms in Diabetes.—Roholm and Hess Thaysen report that, after intravenous injection of 12 units of insulin, symptoms of insulinism developed in 98 out of 101 attempts, or 97.3 per cent, in 80 persons with normal carbohydrate metabolism. In 82 experiments on 40 diabetic patients with intravenous injections of 12 and 24 units of insulin, insulinism was found in 19.7 per cent and 57.1 per cent, respectively. For development of the symptoms the blood sugar minimum must fall to about 50 mg. per hundred cubic centimeters and within about fifty minutes after the moment of injection. The kind, order, frequency and strength of the various symptoms are identical in the diabetic and the normal organism. There is no evidence of hypersuprarenalinemia in diabetes. Gastric secretion after the injection of insulin follows the same laws in diabetic as in normal persons.

Hygiea, Stockholm

95: 481-512 (July 15) 1933

*Benign Miliary Lupoid (Boeck): Case. F. Sundelin.—p. 481.

Benign Miliary Lupoid.—The diagnosis in Sundelin's patient, aged 14, based on the typical roentgen picture of the lungs, and chronic swelling of the parotid glands and of the submandibular lymph glands, accompanied by eosinophilia and monocytosis, with good general condition, was confirmed on histologic examination of an excised lymph gland. An acute exudate pleurisy presented a complication of one week's duration. The parotid swelling disappeared after roentgen treatment, and after two years all symptoms had vanished. The author says that benign miliary lupoid is a general disease varying greatly in localization and symptomatology; skin and bone changes are often absent.

Ugeskrift for Læger, Copenhagen

95: 803-818 (July 20) 1933

*Tuberculous Splenomegaly with Roentgen Treatment: Case. C. Schwensen.—p. 803.

Infectious Erythema. A. Kissmeyer.—p. 805.

Dental Focal Infection. E. Jarlov.—p. 808.

Tuberculous Splenomegaly.—Schwensen finds only one previously reported case of roentgen treatment of tuberculous splenomegaly (Hallermann). In his personal instance roentgen treatment of the spleen resulted in apparent recovery, the splenic tumor disappearing and the temperature and blood sedimentation becoming normal, with subjective well being and increase in weight. He regards the prognosis, however, as doubtful; roentgenologic signs of pulmonary tuberculosis continue, and as the spleen has not been removed there may be danger of recurrence, as in Hallermann's case. The patient must therefore be kept under constant observation and possibly be given after treatment.

